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Table of Contents

PAGE

PROPER SELECTION OF PATIENTS FOR PLEOPTIC TREATMENT OF AMBLYOPIA
John P. Beale, Jr., M.D. 138

NURSING CARE OF THE AGED WITH EYE DISORDERS
Elizabeth Mills 142

THE VALUE OF LOW VISION AIDS: PANEL DISCUSSION 144

PROPHYLAXIS OF THE EYES OF THE NEWBORN
COMPARISON OF METHODS; NEW YORK CITY STUDY 161

POTTSTOWN WORKS SET A RECORD
A. T. Metcalf 163

NEVADA BOYS JOIN JUNIOR WISE OWLS 166

MERGER OF OPHTHALMOLOGICAL FOUNDATION WITH NSPB 167

LONDON MEETINGS 168

HELPING THE PARTIALLY SEEING CHILD IN THE REGULAR CLASSROOM
NSPB ADVISORY COMMITTEE ON EDUCATION OF PARTIALLY SEEING CHILDREN 170

NOTES AND COMMENT 178

AROUND THE WORLD 182

CURRENT ARTICLES 185

BOOKS AND PAMPHLETS 197

ADVERTISEMENTS

EXCERPTA MEDICA 200

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Proper Selection of Patients for Pleoptic Treatment of Amblyopia

JOHN P. BEALE, JR., M.D.
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Techniques developed in the past ten years now make it possible to treat conditions previously considered to be hopeless.*

THERE are an estimated 4,000,000 people in the United States with amblyopia—poor vision in an eye due to lack of use. For slightly over 200 years the treatment of this condition has remained essentially the same, namely occlusion of the seeing eye in order to force use of the eye which has not developed well functionally. Partial occlusion is achieved by putting cycloplegic drops in the better eye, or by covering the spectacle lens over that eye with a semi-opaque material such as nail polish; total occlusion by the use of a dense tape occluder affixed to the face.

Glasses are prescribed at the outset of treatment for those with refractive errors, and after vision has ceased to improve surgery is performed where indicated to place the eyes in proper alignment so that the patient will have an incentive to maintain the acuity of the treated eye.

Unfortunately the results have not always been good, and a significant number of patients do not respond to these standard treatment methods. Some of the failures are due to lack of cooperation on the part of the patient or because the amblyopia is not discovered until he is too old to develop the functional potential which his anatomically normal eye had when he was younger. However, many of the failures are due to the fact that the patient is not using his fovea for fixation. For one of several reasons, including the presence of strabismus or a difference in refractive error in the two eyes, the patient learns to use an eccentric area away from the fovea for preferred fixation. This eccentric fixation is developed for convenience to avoid diplopia or a conflict in image sizes between the two eyes. In time the active suppression of the fovea and the preference for an eccentric fixation site becomes a conditioned reflex which is present even when the good eye is occluded.

Since the vision potential of the retina drops off sharply with fixation outside the fovea, the new pseudomacula is limited in acuity no matter how much effort is expended by the patient.

Eccentric Fixation Not Rare

Actually the patching of the good eye in cases with eccentric fixation only serves to reinforce the abnormal pattern, in most instances. This eccentric fixation is not rare. In my opinion about 33 per cent of all amblyopes

* From the Department of Surgery, Children's Hospital, San Francisco.

over the age of five have developed this difficulty. It is a fact that treatment for this large group has nearly always been disappointing.

However, in the past decade two European researchers, Bangerter of Switzerland and Cüppers of Germany, have developed somewhat similar though certainly not identical techniques for amblyopia treatment particularly of the type due to eccentric fixation. This therapy they have called pleoptics. The purpose of pleoptics is to reestablish the physiological superiority of the fovea over the surrounding retina while at the same time correcting the faulty spatial localization which the eye has developed.

Diagnosis can best be established by the use of a new ophthalmoscope known as the visuscope. With this instrument it is possible to project a cross upon the fovea which can be observed by the patient and examiner alike. The examiner places the cross upon the fovea and then directs the patient to look at the cross. If the patient moves his fixation to an area outside of the fovea, then eccentric fixation is present. By rotation of a dial, it is possible to project a series of concentric rings upon the retina which will measure the amount of eccentricity to half a degree.

Value of the Visuscope

The visuscope is a good ophthalmoscope, optically sound, and has other projection discs which can also be of use to the practicing physician. As this instrument comes into greater use I am sure that it will be evident that the use of a pseudomacula in amblyopic eyes is more common than has previously been suspected. In cases with marked eccentricity it is even possible to make a tentative diagnosis with a standard ophthalmoscope merely by watching the shift away from the fovea when the patient is directed to look at the light.

Patient Selection

Pleoptics treatment is hard work for patient and therapist alike. We are enthusiastic about the results which can be obtained with this technique but in the interest of the patient's time and the expense it is wise to establish the criteria for patient selection. Our evaluation for acceptance for treatment is divided into six categories. The first two to some extent do not require special equipment, though a visuscope is certainly desirable.

1. *Funduscopy.* A careful study of the macula area and the optic nerve is necessary in order to be sure that there are no organic defects which would reduce the potential acuity. At this time, since we are using a visuscope, the amount, position, and stability of the fixation are appraised. Treatment is more difficult if beyond four degrees, or if the pseudomacula is on a vertical line from the fovea. If the patient has wandering fixation without preference for the same eccentric area each time then his problem is more amenable to pleoptics.

In some desperate cases treatment with macular pathology may be undertaken. At the end of ten treatments if no progress has been made the treatment should be discontinued.

2. *Visual Acuity Testing.* One clue to the prognosis can be obtained merely by testing the patient's vision with isolated letters (angular vision) and with the entire line of letters (linear vision). Amblyopic patients have difficulty in separating individual letters

in the line and thus will record a better vision score when presented with individual letters. If the disparity between the angular and linear vision is more than three lines then the amblyopia is of a type which will be less responsive to treatment.

3. *Photopic and Scotopic Vision Testing.* Previous work has shown that a comparison of visual acuity for each eye under photopic and scotopic conditions can yield useful information regarding the etiology of poor vision. The linear visual acuity obtained under normal circumstances is compared with the linear acuity obtained when the patient is looking through a neutral density lens. We have worked out a scale which has reduced this ratio to a percentage form.

On the basis of this comparison between photopic and scotopic tests it can be shown that the values obtained separate all patients fairly well into three categories, namely suppression amblyopes, normal patients and those with organic disease. Results thus far indicate that it is possible to divide those with poor vision into organic and suppression groups and that the test can even serve to eliminate some malingerers or those with hysterical amblyopia.

4. *Afterimage Test.* The objective evaluation of the macula and the fovea may not always reveal pathology since it is possible to have organic disease in the sensory receptors of the retina even though the ophthalmoscopic appearance is normal. For this reason it is wise to use other tests which can assure the presence of an intact perception system.

The German system of pleoptics utilizes a therapeutic instrument known as a euthyscope which projects a doughnut-shaped light onto the retina. The dark center overlies the fovea, and when the patient looks at a white screen he will initially see a positive afterimage corresponding to the light which has been flashed into his eyes. In the normal there will be a transition to a negative afterimage wherein the patient will observe the dark central area to become a light round spot while the periphery becomes dark. A patient with organic pathology of the fovea or a very deep-seated suppression will be unable to see a negative afterimage. These patients have a very poor prognosis.

5. *Haidenger Brush Test.* Another of the therapeutic instruments is the coordinator, which also proves useful in patient selection. Essentially it is a viewing box within which a rotating polarized lens is illuminated by a blue cobalt light. The rotation of the lens has the appearance on the viewing screen of a rotating airplane propeller, and because of the anatomical structure of the macula this rotation can be perceived only by the fovea. Patients who do not see this rotation are assumed to have organic macular disease.

6. *Binocular Vision.* It is important to know if the patient has the ability to use both eyes together properly, that is, whether fusion is present. This can be measured on a troposcope, an instrument which flashes pictures before each eye. The patient's subjective response to the pictures indicates the extent to which he is capable of blending the images of the two eyes. This test is important, because if the patient is not capable of binocularity it is quite possible that he will revert to his original eccentric fixation pattern after treatment is discontinued. If he does not show fusion, he must at least

have the ability to alternate freely between either eye. With good alternation the patient will continue to use the previously eccentric eye and thus maintain the acuity which he has obtained through his training period.

Finally, even the patient who is acceptable on the basis of all the aforementioned criteria may still be a poor candidate for treatment if he is not adequately motivated. Pleoptics treatment is active, not passive; consequently the individual's intelligence, and psychological stability affect the ultimate result. The parental attitude, too, must be good, so that encouragement can be given when enthusiasm wanes. The daily visits for the half-hour sessions are continued for eight weeks and such a regimen is demanding on the family. If the patient lives a considerable distance from the center it will be just that much more difficult for him to adhere to an adequate treatment schedule.

Age in itself is not a limiting factor. With the methods of Bangerter of Switzerland, the minimum age is considered to be four. It is an unusual child who can be treated before the age of six by the German technique. And, contrary to the usual teaching, there is no fixed upper-age limit. At the present time our oldest success is a 34-year-old lady who has improved her visual acuity from 20/200 to 20/30, and in time we expect to encounter good therapeutic prospects in older people.

Outstanding Advances

In summary, then, poor vision due to amblyopia is not uncommon. Treatment of the condition, particularly when associated with eccentric fixation, has shown outstanding advances in the past 10 years. Amblyopic patients previously considered to be hopeless can now be treated with gratifying results by pleoptics if candidates for treatment are properly selected.

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SOCIAL WELFARE CONFERENCE

The 89th Annual Forum of the National Conference on Social Welfare will be held in New York City, May 27–June 1, 1962. A record attendance of over 5,000 persons is anticipated, reports Joe R. Hoffer, executive secretary of the conference.

The program committee is headed by Fedele F. Fauri, dean of the School of Social Work, University of Michigan and president of the National Conference. Fred Delli Quadri, dean of the New York School of Social Work, Columbia University, and Clark Blackburn, executive director of the Family Service Association of America are the chairmen of the committee planning the special series of meetings.

Detailed information on the forum may be obtained from 22 West Gay Street, Columbus 15, Ohio.

NURSING CARE OF THE AGED WITH EYE DISORDERS

ELIZABETH MILLS

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Genuine concern and affection for these patients aid in establishing a relationship of trust and understanding.*

A HIGH DEGREE of competence is required in the nursing care of the aged. Frequently a number of ailments complicate the clinical picture. This is often true in the case of cataract patients. However, the combination of age and illness is a challenging one for the nurse and I personally find the special attention given to these cases very rewarding. Those of us who have seen an old person look at the beauty of the world with restored vision cannot easily forget this small miracle. I am convinced that restored vision has sometimes added years to life, for with it has come restored purpose—a vital life force.

Specialized knowledge and training are necessary in eye nursing. Skill, sensitivity and precision are essential. The nurse must have a clear understanding of the use of drugs, of the plan of treatment in each case and the rationale upon which it is based. In one sense eye nursing is usually not difficult, since these patients are not critically ill. However, a multitude of details are involved, aimed at creating an environment for healing, protection from injury and/or disease complications. I shall not attempt to discuss these details here, but rather to outline some of the general principles of nursing care of the aged which, if understood and followed conscientiously, will greatly facilitate the handling of eye cases.

Reassuring the Patient

Generally speaking, the plan of care involves a slower, more deliberate pace, adapted to the patient's needs and the modifications in his daily regimen. Effective communication is vital, and it should be established at the outset. A nurse can evaluate the quality of her care of eye patients on the basis of communication through hearing and the sense of touch. If the patient responds well under these circumstances the nurse is handling the case successfully.

The nurse should be able to give the eye patient the assurance that he is safe under her care—the feeling of security so important to those who face the ordeal of surgery, hospitalization or a period of medical treatment. She should have a clear understanding of her own responsibilities and be able to carry them out efficiently.

* Digest of a paper presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 12, 1961.

Good judgment is needed in assessing the amount of information the patient should have about his condition. A family member usually needs to be well informed, one who recognizes the special needs of the aged.

Dependency Factors

The degree of dependency of the patient should be evaluated as accurately as possible. There may be limitations in movement—in walking, standing, getting in and out of bed or chair. Poor muscle tone, stiffness in joints, unsteadiness, or general weakness may be responsible. In assisting the patient the nurse should use her knowledge of body mechanics in such a way that her own balance is firmly maintained.

Other conditions requiring evaluation are sensory limitations (vision and hearing), instability in temperature control mechanism, physiologic changes in circulation, and in the respiratory and gastrointestinal systems. Exercises in deep breathing and for stimulation of circulation are important and not difficult to carry out, even with surgical patients.

Certain neurological changes may affect coordination, memory, mental alertness and comprehension. Sometimes there is a degree of psychological dependency; the aged are often childlike in their approach to life and in their spontaneity. However, it is a mistake to equate the two, and I frequently spend considerable time discussing with students not the similarities, but the differences.

Children are exploring and discovering life; the aged are reliving and assessing it. It is well for a nurse to remember that as the external world of the aged becomes smaller, the inner world becomes larger; and so to an extent many old people become egocentric, and need special recognition and attention. It is necessary to differentiate very carefully between physical and psychological dependency. For example, the need for assistance in dressing and undressing does not of itself imply inability to make decisions. Certain changes do occur, of course, which may affect judgment so that someone has to assume total care, including making of decisions. This is determined on an individual basis.

Avoiding Tension

It is well for a nurse to remember that the fears of the aged may be closer to reality than are the fears of younger persons. Complications are more likely to occur, wound healing is slower and the possibility of blindness is greater. The occurrence of other general complications is more probable. Since the adaptive mechanism is less stable, tension is likely to develop. I sometimes think that a really good nurse is one who can establish and maintain complete relaxation, mentally and physically, in her patient. This is certainly true in relation to the aged who have eye surgery. Tension, as we know, can cause squeezing of a sensitive eye, or sudden jerky movements of the head.

Old people should have the support and care which will reduce this possibility to a minimum. Genuine concern and affection for them are important in establishing a firm relationship of trust and understanding.

The Nurse, Her Role in Eye Health is the title of a pamphlet available from NSPB. No. P504. Price 10 cents.

THE VALUE of LOW VISION AIDS

A panel of experts who have had extensive experience in fitting devices that help persons with visual impairment to see discuss the progress made in this field and the specific problems of various age groups.*

Chairman

ALBERT E. SLOANE, M.D., director, Low Vision Clinic, Massachusetts Eye and Ear Infirmary, Boston.

Participants

EMILIE U. FARNSWORTH, administrative supervisor, social service department, Massachusetts Eye and Ear Infirmary.

GERALD E. FONDA, M.D., director, Low Vision Clinic, New York Association for the Blind, New York City.

ROBERT FRANCIS PENN, M.D., director, low vision aids program, Veterans Administration Hospital, Hines, Ill.

LEONA ROBINSON, supervisor, visually handicapped, Nassau County Public Schools, Westbury, N. Y.

CHARLES W. TILLETT, M.D., director, Visual Aids Clinic, University of North Carolina Medical School, Chapel Hill.

DR. SLOANE: Our panel represents a group who stand for a changing philosophy, one with which the National Society for the Prevention of Blindness has been deeply concerned since its early years. We do not believe that use of the eyes damages them, nor that nonuse preserves them. We do believe that reading should be the privilege of every child who has any sight and who can be made to see, even if just a little. Eyes that are capable of seeing outdoors are capable of reading.

We are a group who know what can be done with low vision aids. We have experienced the good feeling that comes when we have been able to help people, and have won their gratitude. When we have been unable to help others who wanted to be helped we have shared their disappointment. And we have been frustrated by those who could be helped, but were unable to accept it. Fortunately an ever-increasing number of doctors refuse to be discouraged by these patients and spend extra time with them.

We must continue to strive to increase our knowledge and to reach more people with this vital service.

I am now going to turn the meeting over to the panel. Then we will have a period of questions, and finally a summary. Our first speaker will be Dr. Gerald Fonda, one of the pioneers in this work.

DR. FONDA: My assignment is to discuss the visual aids that I find most useful, their cost and their availability. First, in discussing aids for distance, I want to emphasize that just by a careful refraction I have been able to help 20 per cent of these

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 12, 1961.

patients to a significant extent. For example, some of them who are very nearsighted are not wearing any glasses. All they need is a high minus correction to bring the vision up to 20/200; sometimes to 20/100. Others are wearing a strong correction but it hasn't been changed in 15 years and they need to have it increased.

Now I want to describe the nonoptical method of magnification. (*Shows slide*) On this slide the numbers along the horizontal axis indicate distance in feet from the object of regard, and the numbers on the vertical axis indicate the degree of magnification. If a person advances toward the object from 20 feet to ten he produces a magnification of two times; if he moves from 20 feet to five he produces a magnification of four. Moving from 20 feet to two he produces a magnification of ten.

This method has wide application, notably in viewing television. Suppose one ordinarily looks at the screen from 20 feet. Moving up to 10 feet results in a magnification of two times, which is about what is produced by telescopic spectacles in most cases. At one foot from the set, the magnification is 20. It is just a matter of getting closer. The field of vision isn't restricted. This device, by the way, doesn't cost a penny.

If Johnny is sitting 20 feet from the chalkboard in school he may complain that he doesn't see well. Moving him to the first row gives him a magnification of four times. If he doesn't see well enough then he can simply walk up close to the board. This is the most useful, flexible and inexpensive method of producing magnification, one that is used unconsciously by a person with limited vision when, for example, he walks up to view a street sign at close range.

Contact lenses are very useful in some cases of corneal scars and keratoconus. We don't have too many of these, however, because so many corneal transplants are now done successfully. When a person has only one eye a contact lens very often improves his vision from 20/100 to 20/30. Patients who suffer from malignant myopia, a very rare condition of extreme nearsightedness, can sometimes be improved from 20/100 to 20/70 by using a contact lens which increases the size of the retinal image.

We have our greatest success in the area of near vision. I should like to emphasize again the value of a careful refraction before trying anything else. Sometimes just an ordinary pair of glasses is needed.

The nonoptical method is just as useful for near as it is for distance. (*Shows slide*) This is the slide I showed you a few minutes ago. There is a difference in interpretation, in that the numbers on the horizontal axis indicate the distance in inches from the eye; the vertical axis indicates the degree of magnification. Thus if you bring a book from 20 inches to two inches from the eye you have a magnification of ten times. A person who has malignant myopia can read very well just by taking his glasses off and bringing the book up to his nose. It does not harm his eyes to read in this fashion. In fact, in one sense he is fortunate; he has a built-in magnifier.

A ten-year-old child with a congenital defect may be able to read by holding a book four inches from his eyes, because he has the available accommodation, or adjusting power. He doesn't need glasses. I have made

some errors in the past by prescribing glasses for ten-year-olds thinking they had to read newsprint, but I find they are not concerned with it at that age. If one can make it possible for them to read their school books that is all that is required, and they may only need to hold the print close to the eyes.

That emphasizes the importance of testing not only for distance but for near, and at the distance which gives the maximum vision, not necessarily at fourteen inches. Many of these children who can read at four inches don't require glasses. Many adults as well can read by using the nonoptical method.

Older persons may need strong plus lenses which are on the order of those prescribed after a cataract operation. We prescribe these either for ordinary frames, as half glasses or bifocals. Forty per cent of these patients use only one eye, so if they have an old frame we just put in one lens. The half eyeglasses have very definite advantages; the lenses are lighter, smaller and less conspicuous. It is very easy to look over the top of them and become oriented to the surroundings. They are relatively inexpensive and readily obtainable; it doesn't take four to six weeks to get them.

The bifocal is primarily for a person who requires a strong lens for distance. It is almost imperative for one who has been operated on for cataracts. Such lenses are more expensive and unfortunately it may take four to six weeks to obtain them.

The average price of conventional glasses for distance is about $25, but it is sometimes much less.

The visual aid that I have found of greatest use for distance is a single magnifier called a monolux. This magnifies six times and is used for one eye. It has a pretty fair field. The price is attractive—$15.70 at the Lighthouse. Contact lenses range from $60 to $150.

The average price of glasses for near at the Lighthouse (mainly the strong plus lenses) is about $22. Through the New Jersey Commission for the Blind it is about $34. The difference is explained by the fact that the Commission permits the patient to go to any optician he chooses, and the optician is allowed a margin of profit. The most expensive pair that I can remember prescribing was $64. That was for spectacles with bifocals.

I was amazed to find that the Lighthouse sells one hand magnifier for 25 cents. As a rule, however, the average price there for one of these aids is $3; the most expensive is $6.80.

Until about six weeks ago I had been prescribing a very strong 50 diopter aspheric lens that magnifies 12 times and costs about $17. One day Mr. Charles Koehler at the Lighthouse said, "Try this one." He showed me a magnifier that has been in existence much longer and is better known, and added, "I think the field is about the same." I tried it, and the field was the same. He said, "Well, that costs $2.25." After prescribing the $17 item for two years I learned that the one for $2.25 is just as good.

In general I find the most expensive aid is the least useful. I don't know whether I will be changing my mind about this two or three years from now, but it is my opinion at present.

Of course conventional glasses are available at any optician's. As to magnifiers and other aids—since the American Foundation for the Blind gave up their service, the Lighthouse has been moving into this area by degrees. We

are now convinced that such a service is necessary. As a matter of fact, Mr. Koehler has an exhibit at this conference and for the first time we have a price list of aids that are available.

CHAIRMAN SLOANE: Two points that Dr. Fonda made bear considerable emphasis. One is that the cost of these devices need not be high. Many persons have this impression and it has kept them from seeking help. The other point is that the most expensive are not necessarily the best.

It is very difficult for a person with normal vision to understand how a person with limited vision sees. We have often taken well-made magnification systems that are very expensive and compared them with cheaply-made systems of similar power. Anyone with normal vision would immediately be able to spot the difference in quality. He would not settle for the cheaper one. But the patient who has aberrations in his eye may pick the one of poorer quality because the distortions actually help him to see better. So, while we should always aim for the best for our patients, the best is not necessarily the most expensive.

I am now going to call on Dr. Robert Penn, who has had a unique experience in working with people in the middle age group—the veterans.

DR. PENN: My experience in this field is limited to the service-connected, legally blind veterans. We have had the opportunity to screen the case files of those in six adjacent states out of ten regional offices. Approximately half of them were eliminated on poor vision alone, and not even brought in. Those remaining were considered potentially good candidates for study, but only half actually came in.

This program was optional; there was no duress. We did not want the social workers to use any pressure because we thought if these patients came willingly we would get better cooperation. The social workers' enthusiasm, their warm approach and interest in the problem, was reflected in the men who came in.

These patients had not been seen for years and their files had been closed. There were cases of burned-out uveitis, macular degeneration, disseminated chorioretinitis, traumatic corneal lesions, retinitis pigmentosa, and optic atrophy. Frankly, I was surprised at the relatively good results we achieved. Approximately 20 per cent of these legally blind veterans benefited just by simple refraction. On the average we found that going over 50 diopters did not make too much difference. This implies that the patient should have at least 3/200 vision to be a good candidate.

I tried to make a composite profile of a good potential candidate from what we had seen of this group of men. Four out of five were married, about 40 years old, averaged two or more children, and were receiving compensation both from a pension and current employment as laborers. The majority had had only a grammar school education; many of the others had not completed high school. In general all had made a good community adjustment. They were injured on the average 18 years ago; had not been in the blind rehabilitation training program.

I would gladly take a candidate with this background, sight unseen, if his best corrected vision were at least 3/200. I think we would have something to offer him. Approximately 22 per cent of all the cases we saw had

absolutely no help from the aids. The rest were benefited, each patient establishing his own standards.

One of the important things is to establish rapport, so that the patients try to be helped. We first discussed the term blindness with each one. We told him we knew his vision was limited, that we had seen other cases like his; that he was no different from the others. Each was treated as a new case, just as if nobody had seen him before. Obviously we ruled out any medical or surgical pathology which was amenable to treatment. We then did a complete workup, and in general followed the rules laid down by Kestenbaum and Sloane as a guide in determining the power of the aid to be used. The patient then subjectively determined which aid best met his need.

If the veteran uses his aid, is pleased with it, and is willing to replace it in case of breakage or loss, I consider that a good case. The role of the social worker is extremely important here; in fact, whether or not veterans return for service depends very much on the social worker. We work quite closely on this problem.

CHAIRMAN SLOANE: Thank you, Dr. Penn. Most of us have not had the opportunity of working with this age, and we are very grateful for the information you have given us.

I shall next call on Dr. Charles Tillett, who will discuss problems of low vision testing in the older age group.

DR. TILLETT: It has been our experience in the North Carolina low vision program that optical aids are not as likely to be helpful to individuals past 65 as to the younger groups. We can very often give older persons good reading vision with the proper lens, but their motivation is sometimes not as great, and the reading habits are less flexible. We are sometimes faced with an elderly individual who prefers not to read at all rather than at an uncomfortably close distance, and in an unfamiliar manner. A 35-year-old patient who loses vision and has a family to support will make a supreme effort to utilize any reading aid offered in order to maintain his livelihood. A 70-year-old patient with no dependents who reads for his personal pleasure, but has no occupational need, may be less inclined to make the effort to use the strong lenses.

I have not forgotten the adage that age is a state of mind, not a number of years. All of us have seen patients in their seventies, or even eighties, who have the alertness and the motivation of persons half their age. They will do well with optical aids.

To this audience in which there are many individuals who work with the near-blind I would offer two suggestions:

First, exercise some restraint when discussing optical aids with the elderly. If the worker is too enthusiastic the patient will come to the doctor expecting a complete restoration of vision. When he discovers the limitations of the aids, the close reading distance, how few words he can read at a time, the fact that he may have to read with only one eye, the resulting disappointment may kill any chances for successful rehabilitation. If the patient has no false hopes when he sees the doctor he is more likely to be pleased and accept the very real help that can be offered.

The second suggestion is in the form of a challenge. After the patient has seen the doctor and the optical devices

have been offered, the social or case worker may then spell the difference between failure and success. In the older patient, particularly, the worker may offer the encouragement and assistance needed to make the reading habits more flexible, and to increase the motivation.

Optical aids may be prescribed in the form of glasses, or mounted so that they may be held in the hand, or rested on the reading material. We have been inclined to start the older patients with mounted lenses. These are commercially available at reasonable cost in a variety of types and in strengths up to 50 diopters. Aids which are fitted into glasses, such as the Volk or American Optical microscopic lenses, are often expensive and usually cannot be returned for refund. If we prescribe such glasses and they cannot be used successfully we have put the patient or an agency to considerable unnecessary expense. Expense, of course, is a relative matter; but glasses begin in the neighborhood of $25, microscopic lenses can reach $50 or more. If the patient has to spend this amount, and is unable to use the aid, one can imagine the disappointment, both personal and financial.

We maintain a considerable stock of commercially available mounted lenses of various strengths that we lend to the patient. If he is unable to adapt to a strong lens it can be returned without cost to anyone; or if the patient finds that he needs a somewhat stronger or somewhat weaker lens for certain tasks, additional lenses can be borrowed on a trial basis. If the patient accepts the strong lens well, but prefers it in the form of spectacles, we then prescribe them, and they are usually well tolerated.

I should like to reemphasize that with older patients, as with the younger, no one lens, no one set of glasses, may meet all of the individual's needs; and in a favorable case we do not hesitate to prescribe two or three lenses of different magnification for various tasks.

One further point: Since degenerative eye diseases may gradually get worse, older patients may require aids of increasing strength as time goes by, and they should be re-examined periodically.

CHAIRMAN SLOANE: Thank you, Dr Tillett. Many people believe that reading is merely a matter of being able to see print; but if one were to make a study of the reading habits of the elderly, one would find that they don't read as much as they might. Simply putting a glass on a person does not automatically make him a reader. All of us have gone on vacations, taking six books with us and said, "Now I will get caught up with my reading because I won't be so busy," and then come back without having finished a book. The reading load increases each year while we are at school. Once we leave school the load is not as great. We don't read as much, and therefore, cannot read as long without getting tired. If this is borne in mind the rehabilitation of the patient will be a bit easier.

I should like now to call upon Miss Farnsworth, who has been invaluable to us in our clinic.

MISS FARNSWORTH: From what we have heard this afternoon, and from experience which many of us have had in subnormal vision or vision rehabilitation clinics, we can feel quite sure that subnormal visual aids do offer

considerable real assistance to many people in all age groups whose degree of vision does not permit them to read ordinary print or to see close work, either with or without ordinary glasses. However, I am also sure that all of us have seen many persons who technically get good results from one or more aids in the examining room, but on follow-up they are found not to be using the aids even though they may have purchased them.

It is because of this fact that a social worker can be useful in a visual aids clinic. Traditionally she works especially with those patients who seem to be unable to take advantage of treatment offered—attempting to find out why this is and trying to help them overcome the obstacles. Sometimes the obstacle is tangible; for example, money for a necessarily expensive aid. Over the years, however, we have found that patients are often blocked more by their feelings and fears about their condition or the treatment measures necessary than by lack of tangible needs, such as money. They are fearful of the treatment, thinking it may change them as people or affect their lives and relationships with family or friends. These feelings are often so strong as to make them refuse treatment even though the end result might sound desirable. We therefore work more and more in the area of patients' feelings—trying to help them express them, understand them and then hopefully to be able to change them so that treatment will be accepted.

The very nature of subnormal visual aids is such that patients could surely be expected to have mixed feelings about using them—to say nothing of the feelings they have about their need to be in such a clinic at all. It seems, therefore, particularly fitting that a social worker be a part of the clinic team. The feelings vary somewhat according to whether the patient has had good vision and lost it or has never had much vision and is hoping to gain some; also according to what kind of person the patient is, what his life experiences have been, his relationships with other people, and his hopes for the future. They play a large part in producing the good motivation found in some of our patients and the poor motivation found in others.

Even patients with good motivation usually need special help in order to make good use of aids, since visual habits or patterns have to be relearned. Extra time, effort, care in fitting, reassurance and technical assistance is given by the various team members to virtually every patient who comes. Our team at Massachusetts Eye and Ear Infirmary consists of ophthalmologist, optometrist, occupational therapist for what I refer to as technical assistance, and social worker. Often we find that patients have not really adjusted to their loss or lack of vision, have unrealistic hopes of what can be gained from aids. Perhaps because of past life experiences they cannot trust even a doctor when he says their eyes will not be harmed by using aids and therefore they hesitate to dare try them. As we get to know these patients and what their life experiences have been it may be that we can help them adjust to their visual status or to become better motivated to use aids successfully. Possibly some help other than visual aids is really needed and we can direct them to it.

I should like to comment about each of the special age groups which we have heard discussed today.

The older patients usually have had good vision all their lives but have now lost it. Often they seem unable to adjust to aids but may be just discouraged about life in general and feel learning to use an aid isn't worth the effort. The social worker's interest in them as people can help their motivation. Some are more anxious to be reassured that there is a lens which will still enable them to read rather than really wanting to read at length. However, I shall never forget the 83-year-old man (a former seller of rare books) who used his 7X Polikoff lenses by the hour to do crossword puzzles which he loved. He had macular degeneration with 20/300 vision with ordinary glasses, 14/28 with Polikoff's. There are others, too, who really use an aid. Many, however, find adjustment to it too awkward or difficult, or are disappointed because, as one man said, it does not magnify enough. This elderly man had 20/400 without an aid; he got 20/100 and J6 with a sportscope with a +8 add.

With this older group we try particularly to get at their real anxieties and to help with those. As I said, they are often anxieties that any aging person has. If an aid helps we frequently offer one on a trial (rental) basis for two to four weeks, along with practice sessions with the occupational therapist. No more than half decide to purchase the aid but most of them have gained security, and get to resources they need through this clinic contact.

The middle age group, still in their working years, come with different hopes in mind. Those who have had good vision are often hopeful that somehow they can use an aid well enough to keep their jobs. Often those who are highly motivated and secure individuals do—others do not. One whom I remember went through a long period in which he refused to use an aid, insisted that it did not help, that he could no longer work, felt very inadequate as a person and as a husband. He was so belligerent that he antagonized most personnel with whom he came in contact. After contact with a social worker for over two years his feeling about himself gradually changed. He could accept the fact of his visual loss and believe he could still have a satisfying useful role in life. He is now successfully using an aid, working, and supporting his family once more.

I think the majority of those of the working age group who are referred to social service are persons who have had poor vision from birth, frequently have left school early, have had poor work records and are hopeful that somehow an aid will help them obtain better jobs and be happier. They often get good results from an aid but are not satisfied, are very unhappy because they have to expend effort, and vision is still not 100 per cent. These cases are the most difficult and challenging for the social worker and perhaps for the whole team. Our goal needs to be to try to enable these really young people to achieve a happier adjustment in life for the sake of themselves as well as their families. In talking with them we find often a similar pattern; they have always felt different, inadequate, perhaps resentful of others who have good vision; they have never really accepted their visual handicap and have either been trying to achieve unrealistic goals in

jobs, or have done less than they really could do. Through social casework help some of them can come to greater acceptance of their situation, better use of visual aids and their vision, and to more satisfying jobs and lives.

The other group for whom I think we have special responsibility are the children. They are perhaps most important of all, because if we can help them to grow into well-adjusted adults, not emotionally hampered as are so many of the young adults whom we now see, this will be good. Children who come for subnormal visual aids often get excellent results and can really learn to use aids more easily than adults, but they vary in their motivation just as adults do. Again we work especially with those who are poorly motivated—and again we find their feelings usually in the way. Almost always, too, we find that parents' attitudes and feelings have great bearing on how they handle the child and thus on his attitudes and responses. Much of our work is with parents—trying to help them work out any feelings of guilt or shame and really accept the child's handicap. Thus they can give him the encouragement and accepting "climate" that he needs in order to try to use aids effectively and grow up with fullest use of vision possible—hopefully in a regular school program which is so helpful for maximum good personality and social development.

One of our best examples of successful use of aids is a 19-year-old boy, one of our original retrolental fibroplasia babies, now a sophomore at college studying for the ministry. With only 10/200 vision, less than 10 per cent, he has had a completely normal school experience from kindergarten on, using Kollmorgen telescopic lenses beginning in third grade and later sportscope when they were put on the market. Social service as well as the doctor assisted this family, especially when the child was small, through much support of their real desire to have him have the same life and school experience as a sighted child, discussion of their qualms, fears, and problems in the face of apparent obstacles, and interpretation to the school authorities and teachers year by year so that they were willing to go along with the plan, which was a novel one for those days. John today is a typical college sophomore. He has had the usual school career, extra-curricular activities and all, is socially well adjusted and happy in his professional goals. There are others with similar records but perhaps because I have watched him over all my years at the Infirmary he seems to typify what can be done and to serve as a particular inspiration to us in the department to help others accomplish this goal too.

CHAIRMAN SLOANE: Thank you, Miss Farnsworth. You have given an excellent presentation of good social service cooperative effort.

Mrs. Robinson will tell us something about the problems of the classroom teacher, and what happens to the child who has partial sight.

MRS. ROBINSON: I represent a special group who are called itinerant teachers. Our program in Nassau County began some 10 years ago. Our first youngsters who started in kindergarten are now in the eighth grade and about to enter high school. Our program is unique because it was instigated by a private agency, the Indus-

trial Home for the Blind. When the full impact of retrolental fibroplasia was felt this agency found that blind children who were kept at home made a successful adjustment to community living and did well in sighted nursery schools. Their parents were therefore unwilling to send them to the residential schools which had been the traditional places for the education of blind children.

It was almost impossible in Nassau County to send these children to the Braille classes because they lived at great distances from each other and there was no public transportation. So at the instigation of the Industrial Home and a group of parents we experimented with a program of integrating blind children in the public school system, having them go to the classrooms to which they would normally go if they had no visual impairments.

We began some nine years ago with six children and a single special teacher. Today we have 160 children and 20 teachers. Most of these youngsters have made adequate progress; by that I mean that they have kept up with their sighted classmates. Our itinerant teachers confer with the classroom teachers and give special instruction to the partially seeing youngsters as needed.

When this program was instituted we did not include the legally blind, and yet we had children with vision no better than 20/200. Parents of blind children in the community would say, "Why do you want my child to go to a special sight conservation class somewhere at the other end of the island? He sees much better than some of the other youngsters. You have blind children in the school." Of course we realized the logic of this and we have changed our policy. We include the legally blind in our itinerant program; they go to school with their own brothers and sisters and neighbors. Our program has grown by leaps and bounds. We do feel, however, that we need the social worker to help parents work out many kinds of problems.

Of the 160 children enrolled 104 are legally blind, but only 30 are reading Braille. The others are partially seeing, and 40 of them have been fitted with low vision aids in the clinic of the Industrial Home. In the main they have made remarkable progress. Some whose vision originally wasn't even 5/400 are now in their first years of high school. One pupil was first fitted with an aid in 1955, and now with much encouragement, and help, and constant refitting of the lenses, she is functioning quite well in a regular classroom with a very difficult program. She uses large type only for French or math.

Another youngster who is in junior high had a diagnosis of glaucoma and a poor prognosis. We observed that although she apparently had nothing more than light perception she was really reading Braille with her eyes, not with her fingers. The low vision aids clinic worked with her, and now with bifocals this youngster has discarded large type and is functioning adequately in school.

Sometimes we have children who discover what they believe to be a benefit from not seeing. They can read with the aids at the clinic, but at home or in the classroom the lenses remain in their pockets. They ask for volunteer readers and all kinds of other services from their families and teachers. They are unwilling to give up the

attention that their poor vision has brought them.

Young people who have been fitted with lenses rather late may have special problems. I am thinking for example, of a girl of 15 who hasn't ever really been able to read or to see the chalkboard. She has had no special help and has lived for years with a sense of inadequacy and failure. At one point she may have been shunted off into a sight conservation class where because of her low vision she was not expected to read. At age 15, since she is not able to read even on the pre-primer level, the fact that the lenses we now fit will improve her vision doesn't really ameliorate her sense of failure. This girl needs a great deal of help.

The chance for success is much greater when we find a very young partially seeing child who hasn't yet experienced difficulty or failure, and begin to work with him in the classroom and the clinic, and the social worker has contact with his family. The special teacher interprets his problem to the classroom teacher, who frequently does not understand the difficulties of a child who seems to see and yet does not see. He may, as Dr. Fonda pointed out, simply need to stand closer to the chalkboard. He may need instruction in how to use his glasses. In fact, the role of our special teacher relates not only to the little child, but to all the adults who surround him in the school situation—the classroom teacher, the principal, the school nurse, and others.

In the main we have found that when low vision lenses have been satisfactorily fitted, periodically rechecked and reevaluated, the results are excellent. Of our 160 pupils approximately 150 are functioning adequately in the classroom situation. I think this is quite an achievement, a record that could not have been made without the team approach.

CHAIRMAN SLOANE: Thank you, Mrs. Robinson, for a very interesting and informative report. We will now turn to the questions from the audience. The first relates to the need for publicizing these programs. We have all observed that when information about our clinics appears in the newspapers, or is otherwise communicated to the public, there is a sudden increase in patients. Then the interest subsides and we go into a period of depression. We know that publicity is a double-edged sword; it brings new patients, but it also awakens hopes that perhaps should not be awakened. I would like to ask the panel how they feel about the need for publicity, to insure that we make maximum use of the available facilities.

DR. TILLETT: I think publicity certainly is needed but it should be somewhat restrained. Sometimes newspaper articles make it appear that anyone who has a visual handicap simply needs to be fitted with one of these new lenses and normal vision will be completely restored. Patients come in expecting that they are going to walk out with 20/20 vision and they are bitterly disappointed.

CHAIRMAN SLOANE: Dr. Fonda, how do you think this publicity should be handled at an ethical level without raising false hopes?

DR. FONDA: I think this is very difficult because the news media want something spectacular. This is not what we want. Mr. Koehler will ap-

pear on Galen Drake's program this week and he will set a very fine example of the way publicity should be handled.

CHAIRMAN SLOANE: In our hospital we have a very good public relations department, with an executive who is oriented to this particular problem; so we have good and restrained coverage in our area. But how about the areas that have no such fortunate arrangement? Do you suppose it would be in the province of an organization such as the National Society for the Prevention of Blindness to distribute proper information periodically?

DR. FONDA: Yes, the National Society is the logical organization. To avoid exploiting people definite statements should be made about aids that are obviously of no practical value.

DR. PENN: Sometimes the doctors themselves fail to give these programs adequate publicity. Dr. Snydacker and Dr. Fonda gave a very interesting discussion three years ago at the Academy, and I thought many would follow up on it. I would like to see management of low vision cases included in the board examinations for ophthalmologists and optometrists. That is one way of creating an awareness of what can be accomplished.

CHAIRMAN SLOANE: Next question: Can you suggest a term to replace "legal blindness" since this is often misunderstood?

DR. FONDA: I think the difference between total blindness and partial sight should be made clear. To many people the term "legal blindness" implies no vision.

DR. PENN: I dislike the term "blindness" for the same reason. I prefer to refer to these as cases of impaired vision.

MRS. ROBINSON: When you say to parents, "Your child is legally blind," they naturally are quite overwhelmed. We have to work hard to help them overcome their feeling of panic. However, they come to terms with the problem, and so do we.

CHAIRMAN SLOANE: I would like to see the emphasis not on the *blindness*, but on the *vision*, accentuating the positive. Reduced vision, limited vision, partial sightedness, don't quite satisfy. I wish there were something like the word "special"—"special vision"—although "special" doesn't say it either I believe that I can say for the panel that there is unhappiness with the present term, and we are hoping to find a better one.

Another question: What can we do to get the doctor to test people with reduced vision carefully? How can we make sure that he will not overlook possibilities for improvement?

MISS FARNSWORTH: In part this goes back to the matter of education, to publicity. Perhaps the medical societies can help. Lately at Massachusetts Eye and Ear I have been impressed by the large number of referrals to the subnormal vision clinic from the doctors in the regular eye clinic. Apparently they are spotting conditions that might be helped by testing. There seems to be an increase in these cases over the last several months.

DR. PENN: I agree that this is a matter of education. If the fitting of low vision aids were included in the examinations for the ophthalmologist

and the optometrist it would mean a big step forward. Many patients say, "Well, my doctor tried everything, and I have confidence in him." Then you find that you can help these people and they are just shocked. Some of them actually start crying. They didn't realize what they were missing.

CHAIRMAN SLOANE: Dr. Fonda, as one of the early teachers in this field would you care to comment?

DR. FONDA: I can see some progress in this field, but there is so much room for more teaching. I think that Dr. Sloane can play a major role by writing editorials for the *American Journal of Ophthalmology*. He can emphasize that ophthalmologists should test near vision not at fourteen inches necessarily but at the distance at which the patient sees. When the forms for the Commission for the Blind are filled out this should be indicated.

CHAIRMAN SLOANE: The doctors very often know how to do this testing but they have too many demands on their time. It is much easier to say, "There is nothing I can do," than to sit down for an hour and experiment. When patients are sufficiently educated the doctor sometimes has to respond. Occasionally one comes into my office and says, "Do you test for glaucoma?" before I even start an examination. I defy any ophthalmologist not to put a tonometer on the patient who starts the conversation that way.

We might try to devise a simple scheme for testing these people, a sort of screening test. The National Society for the Prevention of Blindness could then make it available to ophthalmologists in a little pamphlet. Perhaps this is worth considering.

DR. TILLETT: Dr. Sloane, don't you think that in a few years the situation is going to be a lot better? In more and more medical teaching centers the students are being exposed to this program—through your center, for example, and Dr. Fonda's work here in New York. There are now a large number of low vision clinics, some associated with medical schools—and through them we will reach the younger doctors.

CHAIRMAN SLOANE: I agree with you that the signs are good. I am just a little impatient. Through what agencies can we reach the patients? Should the divisions of the blind go through all their records? Should it be through the eye clinics, social service agencies, or the family doctor who sees old people who don't get around very much?

MISS FARNSWORTH: I would think that all those might be helpful. Also, public health agencies, public health nurses, might be able to reach some people who wouldn't be in direct contact with clinics or schools or even the division of the blind.

CHAIRMAN SLOANE: I have several questions about specific devices, and here is a chance to get the experts to tell what they think about them. One is the projection magnifier manufactured by the American Optical Company, and another the megascope distributed by the American Foundation for the Blind. Dr. Fonda?

DR. FONDA: Most of the devices are useful under certain conditions, but I think one must keep in mind that a projection magnifier, for example, is a

big instrument and it is expensive. It magnifies five times. A five dollar lens that can be carried in the pocket gives the same magnification. It can be used anywhere and the individual can adjust the light to suit himself.

DR. TILLETT: We have not found the projection device so useful because the magnification is only five times, and, as Dr. Fonda said, you can accomplish the same thing with a simple lens. The magascope, of course, gives up to 25 times magnification. Once in a great while one finds a patient with 3/200 vision, and nothing short of the megascope will enable him to read.

CHAIRMAN SLOANE: Dr. Penn, have you had any experience with this device?

DR. PENN: Yes, I have, and I agree with Dr. Fonda.

CHAIRMAN SLOANE: In our clinic we have had little use for this sort of magnifier. One of the things that negates the magnification factor is the lower level of illumination. While you may bring the magnification up so that the person can see, you reduce the illumination to a point below his visibility curve. However, we are very glad we own this instrument, because ours is a teaching hospital, and we want to have everything that is available.

What about the use of telescopic glasses? How practical are they, Dr. Penn? They have received a great deal of publicity.

DR. PENN: I would rather pass to Dr. Fonda, because he wrote an article on this subject recently with which I thoroughly agree. I reached the same conclusions many years ago.

DR. FONDA: I used to prescribe telescopic spectacles eight or 10 years ago. When I recognized their limitations and what could be done with simple devices I recalled these patients and fitted them with reading glasses or bifocals. Every one of these 50 patients has been pleased and has given up the telescopes. Occasionally a person finds some use for them. One must keep in mind that telescopic spectacles reduce the visual field to 14 degrees.

CHAIRMAN SLOANE: I would not like this audience to think that the telescopes should be discarded completely. In Boston we prescribed them in the early days. Now we find very little use for them in spectacle form unless there is tremendous motivation, as in the case of one little boy with retrolental fibroplasia. But we do make great use of monocular telescopes, generally 10x magnification. The patients carry these in their pockets. When a youngster, for example, wants to spot something far off he uses the telescope and then puts it back into his pocket. So he does not have the restriction of the visual field in getting around, as he would have if he wore telescopic spectacles. These very simple monocular telescopes are of great value.

DR. TILLETT: I would like to say a word in defense of the telescopes. I am sure that many patients will try them and not like them; but we have been rather impressed with their acceptance by individuals in their late teens, particularly college students. The classrooms in most universities are large, and it is not easy to get close to the chalkboard. A telescopic device enables the students with partial vision to see fine detail, such as chemical equations, on the board. The students also use these lenses at football games.

In fact, one can get a lot of pleasure out of them at football games even if he has normal sight. I have tried them myself. Many of these students are very enthusiastic about sports, and they enjoy particularly the inexpensive sports glasses. I think these lenses have a definite but limited place.

DR. FONDA: I should like to draw a distinction between the telescopic spectacles that are worn on the face and the monoculars that are held in the hand. The latter magnify six times and cost $15.70. I see some degree of usefulness for them. But I want to state definitely that I see very little use for the $250 type that magnifies two times.

DR. TILLETT: We get ours at cost, about $45 to $75 for the Kollmorgen, $10 for the Japanese type, and $30 for the German. Nobody is out too much money, and many patients like them.

Someone asked, "Do you feel that older patients who may be somewhat indifferent at the outset can be motivated to accept subnormal vision devices?" I am sure they can—certainly where there is an enthusiastic, capable case worker. The doctors need a lot of help, and the case worker can be of tremendous value.

MRS. ROBINSON: This question relates specifically to teachers. "Does the itinerant teacher in the Nassau Schools help with the teaching of various subjects in areas where the visually handicapped child may be falling below regular classroom standards, as in math, reading, etc.?"

This is one of the basic responsibilities of the itinerant teacher, to see that in no area does the child fall behind. Often she tutors; sometimes she arranges for a tutor, depending on the area. But always the itinerant teacher tries to help the child keep up. That is her real point of focus. Where considerable tutoring is needed she arranges for it through the school, or whatever other agencies are available.

DR. FONDA: I have been given a very good, practical question: "What is the problem presented by lighting when reading at short distances?"

This is a real problem. If a person has to read at one inch, his head obscures the light, and the paper is in the dark. The best advice is to have him sit with the eye that he is using next to the window. If it is the left eye the window should be on the left side. Light intensity can be regulated by the distance from the window; and in this way the light is diffused. At night it is best to simulate this position by having as much light as possible come from the side. One can learn to adjust himself and his reading material to increase the brightness and the contrast.

CHAIRMAN SLOANE: Another question: "In our program we have a number of children with defective vision for whom correction is not prescribed, because vision is not considered correctible. Could these children benefit from the low vision aids discussed this afternoon?"

One should always give a child or adult the benefit of such an examination. I have never been able to predict which patient cannot be helped, and which patient can be helped. If these children have not had an examination one is definitely in order for them.

Question: "Is there any place where reading racks can be purchased?"

We have found the easels used for painting very practical. They are mounted on small tripods and rest on

a table. We have also used the kind of lamp that clamps on the rack of a grand piano. They cost about $6, and make good reading lights.

Question: "Shouldn't the light be mounted on the reading stand?"

It is true that illumination mounted on a reading rack is very helpful. One must remember however, that light is a two-edged sword in the case of many people who have poor vision. They require more light in order to see, but extra light very often creates scatter because of the aberrations in the eye, and they are blinded by it. The effect is similar to that on the windshield of a car after rain has dried on it. If the sun hits it a certain way, the glass appears perfectly clear. If the sun hits it another way one cannot see through it. So it is with opacities in the cornea and other changes in the eye. Generally in the doctor's office the light is overhead in the form of a gooseneck lamp. It is directed toward the card, and reflects away from the patient, so that he does not get any scatter in his eye. The shade of the gooseneck lamp is directed toward the eye, so a minimal amount of light comes back. One must be very careful to show a patient how to read, how to adjust his light.

We are now nearing the end of the program, and we should have a short summary. If I interpret the panel correctly these are some of the things with which we are in agreement:

Visual aids can have a much wider use than they have at present. The use of the eyes is not harmful; nonuse of the eyes is not beneficial.

The integration of the partially seeing student in the regular classroom is desirable. Wearing a visual aid is not a badge of dishonor any more than braces on the teeth, or a hearing aid. A frank approach to the person with reduced vision is the best; he should be told what the limitations are, and also what the advantages are.

Guidance for youngsters who are handicapped and in school should be given by the educators, who can observe progress and serve as vocational counselors. Such guidance should not be paternalistic, but on the same level as, for example, that given to a child who is gifted in mathematics and is guided in that direction. The strong points of a child who has reduced vision should be studied and he should be guided accordingly.

The social service department is indispensable to the success of such a program. Publicity, even though decried frequently by the medical profession, is necessary in order to get the truth to the public. But it must be restrained, and it must be at an authoritative and reliable level.

More patients need to be reached; the method of doing so varies in different areas. We must get more eye doctors to participate in this type of examination.

Aids are available through many sources. The Lighthouse in New York has taken over some of this service from the American Foundation for the Blind, but contact with any of the organizations for the blind will set a person in the proper direction for help.

It is not enough just to give the patient an aid. He must be helped to orient himself with it, and this calls not so much for the services of the doctor as for those of the social worker and the educator.

The term blindness as applied to the partially seeing is not a good one. We are in hopes that we will find some-

thing better, so that neither group, blind or partially seeing, will suffer any disadvantage.

The child should have the opportunity to go to regular school early and be integrated. If he can take care of the early schooling the later education will somehow take care of itself. The point is, don't start children out handicapped.

The physician's report to the teacher on a particular child should give information that is meaningful to her. Instead of merely stating that a child has vision of 20/200 or some other figure, he should tell what this means in terms of type that can be read. Also he should give an idea of the prognosis and the individual needs. Should the child, for example, be allowed to go up to the blackboard? To hold a book at any reading distance he chooses? To cock his head? To ride on top of the pencil when he writes? To hold things very close to his eyes? Should any special precautions be observed in relation to his activities in school, at play, or in the home?

If we follow through with some of these principles surely progress will be made. Thank you.

CORRECTION

Dr. Anthony J. LaTessa, author of the article on "Corneal Preservation" that appeared in *Sight-Saving Review, Summer 1961*, has asked that a correction be made in a statement on page 80 of that issue. The second paragraph in the second column should read:

"It should be noted here that Stocker obtained positive tissue cultures for endothelium after 22 weeks of storage and his ultimate successful clinical results of rabbit cornea stored over varying time periods were 9 out of 17."

GLAUCOMA SCREENING AT AMA CONVENTION

At the annual convention of the American Medical Association, held June 25–30 in the New York Coliseum, the National Society for the Prevention of Blindness conducted glaucoma screening in the section where physical examinations for physicians were given. During the week distance visual acuity and intraocular pressure were checked for 1,423 physicians and others in attendance. Forty-four glaucoma suspects were referred for complete ophthalmological examination, 3.09 per cent of those tested. The criterion for referral was 23 mm. Hg. A Schiøtz tonometer was used.

Of the total number screened 199 had corrected distance visual acuity of less than 20/40; 788 had never had their tensions taken before.

The Society is indebted to the American Red Cross in Greater New York for arranging to have nine Nurses' Aides and Gray Ladies assist with the staffing of the exhibit. Residents in ophthalmology from the following New York hospitals gave valuable assistance in performing tonometry: Lenox Hill; Mt. Sinai; New York Eye and Ear Infirmary; Manhattan Eye, Ear and Throat; New York; and Presbyterian.

All of the suspects have received a letter from the Society urging them to have an ophthalmological examination.

Dr. Willis S. Knighton, member of the Society's board of directors and chairman of its glaucoma committee, assisted by Dr. Andrew de Roetth of the Institute of Ophthalmology of Presbyterian Hospital, was in charge of the screening.

Prophylaxis of the Eyes of the Newborn

A comparison of various methods based on a three-year study of the incidence of ophthalmia neonatorum in New York City hospitals.

AT THE NSPB annual conference session in New York on April 13 advances in scientific knowledge and treatment of eye diseases were discussed. Following Dr. Gilbert W. Mellin's presentation of the factors and risks involved in removing public health requirements for prophylaxis of the eyes of the newborn (*Sight-Saving Review, Summer 1961*) a report relating to this problem was given by Dr. Jules E. Vandow, public health director, New York City Department of Health. This report summarized the results of a three-year study of the incidence of ophthalmia neonatorum in 472,580 infants born in 96 hospitals in New York City. It was conducted by Dr. Morris Greenburg, the late director of the Department of Health's bureau of preventable diseases, and Dr. Vandow.

During 1956–1958 there occurred in these hospitals 49 cases of gonococcal ophthalmia: 22 among approximately 86,000 infants who received no prophylaxis; one among 14,000 in whose eyes salt solution was instilled; 17 among some 259,000 who had silver nitrate instilled; nine among 80,000 who were treated prophylactically with antibiotic ointments and solutions; and none in 33,000 who received an intramuscular injection of 50,000 units of penicillin.

Repeal of mandatory prophylaxis by the New York City Board of Health in 1956 permitted a comparison of various prophylactic methods. Considerable difference in the risk of gonococcal ophthalmia was found among ethnic and socio-economic groups. Among 291,000 infants delivered by private physicians only one case of gonococcal ophthalmia occurred whereas 48 cases occurred among 180,000 ward patients. The incidence was practically the same whether the ward patient was in a municipal or a voluntary hospital. The incidence in Negro patients was about 20 times as high as in white. Among white patients the incidence ratio for infants of Puerto Rican origin was seven to one.

The authors found that in areas with unhealthful conditions and high incidences of venereal disease prophylaxis sometimes failed irrespective of the method. In districts with better living conditions no cases occurred whether prophylaxis was used or omitted.

The authors concluded that host and environmental factors should be considered in determining whether prophylaxis be used; that since prophylaxis is not always effective it should not replace careful observation of the babies' eyes in the postpartum period; that prophylaxis should be used in those areas of New York City where the risk is high and omitted where it is low. None of the hospitals supplying data carried out any

experiments to determine which of their newborns were actually exposed to gonorrheal infection at birth. The conclusions of the authors are hence based upon an inference concerning the population at risk drawn from what appear to be significant social and environmental data.

A complete report of this New York City study appears in the *American Journal of Public Health* for June 1961.

DEEP SEEING

In the *Optometric Weekly* for July 13, James R. Gregg, O.D., discusses the many complex visual problems of skin diving. The most unusual thing about seeing under water is the distortion of size and distance. When vision is normal less error will occur in depth perception. A mask which permits as much peripheral vision as possible aids overall visual orientation and minimizes the distorted images.

On a sunlit beach it is advisable to wear dark glasses prior to deep dive because complete adjustment to dim light takes about an hour. Similarly, when the diver emerges from the water he should put on dark glasses in order to adjust to the bright glare of the sun.

Eye muscle coordination is important. Tensions, muscular exertion and possible anoxia can upset eye muscle balance and result in double vision or considerable discomfort.

Deficient color vision is no real handicap for skin divers since most types of deficiency involve red, an uncommon color in marine life.

An invention called aquavision makes it possible for those who need corrective lenses to see well under water. It consists of a pair of glasses with mask attached.

APPOINTMENTS IN THE NEWS

Dr. James H. Sterner, president of the National Health Council has announced the appointment of Peter G. Meek as the Council's executive director.

Mr. Meek, who since 1956 has been serving as the director of the New York office and northeast regional representative of the National Society for Crippled Children and Adults, has had broad experience in national health and welfare administration. He served as assistant director of the Commission on Chronic Illness from 1949 to 1956. Earlier experience, following graduate training in public welfare administration, included service with the Federal Security Agency and the Pennsylvania Department of Public Assistance.

Dr. John W. Ferree, NSPB executive director, is currently serving as secretary of the National Health Council. NSPB is included among its more than 70 member health agencies. Headquarters are at 1790 Broadway, New York.

David F. Weeks has been named executive director of Research to Prevent Blindness, Inc. The announcement was made by Robert E. McCormick, president of the organization which has national offices at 598 Madison Avenue, New York.

Mr. Weeks was associated with the National Foundation for Infantile Paralysis for 11 years. He was assistant national director of fund raising for the March of Dimes in 1959 when he left the agency to join the fund-raising counseling firm of Kersting, Brown & Co. During the past two years he has worked on campaigns for Harvard Medical College, Massachusetts Institute of Technology, and for Tufts, Vanderbilt, Stanford and Cornell.

The primary purpose of Research to Prevent Blindness is to accelerate research into the causes of the blinding diseases. The chairman of its board of trustees is Jules C. Stein, who is chairman of the board of directors of MCA. Its scientific director is Dr. C. J. Van Slyke, who was formerly deputy director of the National Institutes of Health, U.S. Public Health Service.

POTTSTOWN WORKS SET A RECORD

A. T. METCALF

Former Safety Supervisor
Pottstown Works, Bethlehem Steel Company
Pottstown, Pennsylvania

Those who believe that eye accidents in heavy industry are inevitable should study the results of this 24-year program.*

AT THE Pottstown Works of Bethlehem Steel Company, which cover an area of 95 acres, more than 1,700 persons are employed. The operations are of the heavy type involving fabrication of structural steel for many of the skyscrapers and large bridges throughout the country.

Our eye protection program, inaugurated in 1937, has been particularly successful and we believe the story of its development will be of interest to other industries which are facing the serious problem of eye injuries. It is regrettable that although the measures for preventing such injuries have been available and widely publicized for many years there are still many plants which give them little attention, and as a result eye accidents are numerous and costly both in money and human suffering.

The National Society for the Prevention of Blindness estimates that 1,000 eye injuries occur every work day; and that approximately 12,000 result in some permanent serious disability each year. The minimum average compensation for loss of an eye is estimated at $4,000; many awards are for $10,000.

At least 90 per cent of these injuries are needless and preventable. Among the major causes are flying objects, particles from abrasive wheels, corrosive substances, radiant energy, splashing metals and acids, and poisonous dusts and fumes.

Despite the extreme exposure to hazards in many plants effective safeguarding of eyes is relatively simple, but the program must be administered carefully and consistently.

Protection Not Utilized

Prior to 1937 Pottstown Works had made protective eye equipment available to those who wanted to use it; but nevertheless both management and employees were paying a high cost in money and suffering for eye accidents which occurred yearly. In 1934, 16 per cent of all injuries in our plant involved the eye. In November 1936 a workman lost the sight of an eye when it was struck by a sliver of metal which broke off while he was using a cold chisel and hammer. Three months later a fitter's helper using a sledge lost the vision in one eye in a similar accident.

At this point management determined to exert every effort to control,

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, April 13, 1961.

and, if possible, eliminate eye injuries. At a meeting of the General Safety Committee on March 27, 1937 a resolution was adopted specifying spectacle-type goggles in general for employees who worked in or around the shops and yards. Certain exceptions to this rule applied to such operations as spray painting, woodworking, etc. Early in the evolution of our program our standard eye protection chart was revised to make sure that each worker was fitted with the proper device for the exposure he encountered on his particular job.

Major Types of Hazards

Specifically, in the fabricated steel industry the chief hazards are flying objects and radiant energy. Flying objects may enter the eye from a point directly in front or from the side. Workmen exposed to the former are punch operators and helpers; fitters and helpers; trucking and handling crews; machine operators, draftsmen and officemen while in shop or yard; shop messengers, supervisors and inspectors—to name a few. These employees are provided with safety spectacles without sideshields.

Examples of occupations in which a flying object may enter the eye from the side or from the front are grinding, chipping, drilling and reaming gantry, riveting and welding. For these jobs employees are furnished with safety glasses with sideshields. Plano safety glasses are provided for employees without cost. When corrective lenses are required the plant bears a portion of the expense.

Radiant energy injuries come from exposure to the ultra-violet and infra-red rays of the arc-welding process, widely used in the fabrication of steel. Exposure to ultra-violet rays can be quite serious. The infra-red are heat rays and inflict injury similar to sunburn.

Protection for Welders

Among the employees whose eyes are exposed to the rays of the electric arc are the welder and those working in close proximity to him, such as fitters and helpers. Men in these occupations are provided with properly equipped helmets and goggles. The correct type of protection for the fitter, for example, permits him to read blueprints and to take measurements. Cranemen who operate over an area where welding is done must also be protected; and of course it is not advisable for them to wear goggles with sideshields.

Oxyacetylene welding and burning are also hazardous, although the intensity of the rays cannot be compared with those in arc welding. Employees engaged in burning and cutting are equipped with cup-type goggles.

All the protective eye equipment furnished at Pottstown conforms to the American Standard Safety Code for Head, Eye, and Respiratory Protection Z2.1-1959.

Employee Education Important

Salesmanship and education are necessary in putting an eye protection program into effect. The attitude of employees toward it will be excellent if the regulations are thoroughly understood, and if proper attention is given by management to administrative details and any individual problems that may arise. Definite procedures should be established for sterilizing, reconditioning and replacing equipment as necessary. The fitting of eye-

wear should be assigned to a person who has been thoroughly trained for this responsibility. Many of the objections to wearing eye protection raised by employees result from improper fitting.

Twenty-four Year Record

Now as to the success of our maximum eye protection effort. We have purchased many hundreds of pairs of goggles at considerable expense. If they had saved only one eye, the expense would have been justified, but our record has been far better.

The program at Pottstown became effective March 27, 1937. By the end of February 1961 we had completed 24 years, or a total of 79 million manhours, without a disabling eye injury.

We are justifiably proud of this record. However, we know that it can be achieved by any industrial establishment if management and employees are determined enough. We hope that our story will inspire others to duplicate our efforts and develop an eye protection program that works.

NONMAGNIFYING READING AID

A reading device which aids cataract patients is described by Dr. R. F. Leinbach in the *American Journal of Ophthalmology*. It consists of a single sheet of jet black, lusterless vinyl rigid plastic 1/32 of an inch thick. A slit ¼ of an inch wide and 7¼ inches long is cut midway between the two edges. The aid is placed flat on the page to be read, and the slit exposes one or two lines of print.

This nonmagnifying aid is said to increase the contrast between black type and white paper by intercepting 95 per cent of the light rays, thereby greatly diminishing cataractous haze.

FISHES SEE COLOR

Studies conducted at the National Naval Medical Center in Bethesda, Maryland reveal that many fishes, birds, insects and monkeys recognize color, while cats, dogs and most other higher animals do not.

According to the July 10 issue of *Modern Medicine* the retina of the goldfish was investigated by Drs. Henry Wagner and M. L. Wolbarsht of Bethesda and Dr. E. F. MacNichol, Jr. of Johns Hopkins University. The retina was removed from the eye and mounted on a glass slide. As colored lights with different wave lengths were focused on it, changes in the pattern of electric impulses with the changing colors indicated that this information was being sent to the brain.

The research team reports that chromatic and luminosity responses of the intermediate layers of the goldfish retina are sufficiently complex to enable the fish to distinguish hue as well as brightness of the colored lights. Sensitivity curves derived from these responses suggest that color vision may depend on three photo pigments in the receptors. The pigments have not been isolated and only rhodopsin, the pigment in retinal rods, has been identified.

CONGRESS ON MEDICAL QUACKERY

The first National Congress on Medical Quackery, co-sponsored by the American Medical Association and the U. S. Food and Drug Administration, will be held in Washington, D. C., October 7–8, 1961.

The purpose of the conference is to secure wider application of law enforcement techniques, and to educate the public to the menace of medical quackery.

Nevada Boys Join Junior Wise Owls

THE Junior Wise Owl Club of America, recently organized by the National Society in the interest of eye safety of boys and girls, has now enrolled twelve charter members. The club is a little brother to the Wise Owl Club of America, which has been functioning in industry for the past 12 years under National Society sponsorship. Wise Owls are employees whose vision has been saved from accidental injury by proper eye protection, worn conscientiously on the job.

Membership in the junior organization is being awarded to any preschool, grammar or high-school age boy or girl whose sight is saved from injury or destruction through the use of spectacles with safety lenses, either with or without correction, or other recognized or approved eye protection devices such as goggles or face shields.

Eligibility is determined from information submitted to the National Society by the ophthalmologist, optometrist or optician who prescribed and/or made the safety spectacles worn by the youngster at the time of the accident. In cases where safety eyewear other than with lenses ground to individual prescription is involved, a statement from a school administrator, teacher, parent or other responsible person is acceptable.

Enrolment of the first two Junior Owls was reported in a recent issue of the *Review*. Two other boys who have joined the club were proposed for membership by George F. Hamilton of Hamilton Opticians, Reno, Nevada, who advised and fitted the sight-saving lenses worn by the youngsters when accidents happened.

John Cheever, age 18, of Tonopah, Nevada and several other boys were exploring an abandoned mine when they found an old dynamite fuse. They lighted the fuse, unaware that it was capped, and in the resulting explosion a piece of the cap put a hole half way through John's safety lens. However, it did not break. John's eye—and possibly his life—was saved.

Junior Wise Owl No. 4 is Nicky Grellman, age 12, of Crystal Bay, Nevada. He and a number of other children were playing with a 30.06 shell into which they put 25 or 30 of the caps that are used in a regular cap pistol. Then they inserted the metal part of a dart on top of the caps and dropped the shell on the sidewalk. The impact exploded the cap and sent the dart about 200 feet in the air. In its flight it struck Nicky's safety glasses, breaking a lens, but inflicting no damage whatever to the eye.

Both these boys were wearing shatter-resistant lenses of 3 mm. thickness, the type recommended by the National Society for all young people. Information about enrolment of members in the Junior Wise Owl organization may be obtained from James E. O'Neil, director of industrial service, at NSPB headquarters.

NO REPLACEMENT

A star basketball player lost an eye when his regular street glasses shattered in a collision with another player.

A small investment in a pair of safety glasses would have prevented this tragedy. There is no cure nor replacement for destroyed eyes.

Merger of the Ophthalmological Foundation with the National Society

THE merger of the Ophthalmological Foundation with the National Society for the Prevention of Blindness was announced jointly by the two organizations on July 1.

The Ophthalmological Foundation was founded in 1930 through the personal efforts of Conrad Berens, M.D., eminent New York ophthalmologist. Under Dr. Berens' able direction over the past three decades it has conducted many scientific investigations of eye diseases, compiled and distributed information on causes of blindness to professional and lay persons, and has developed instruments and tests for diagnosis of eye diseases.

For the past nine years the Foundation has carried on its research activities and programs in affiliation with the New York Association for the Blind—The Lighthouse.

Expansion of the Foundation's glaucoma detection project, formerly centered in New York City, into a nationwide activity through the structure of the National Society will be a prime benefit of the unification. Glaucoma is responsible for 13 per cent of all blindness in the country, and is the second leading cause of blindness. It predominantly attacks persons over 40 years of age.

Glaucoma research and detection are major segments of the program of the National Society.

Dr. Ross McConnell, who has headed the special glaucoma detection program for the Foundation and The Lighthouse in New York since February, 1960, has joined the NSPB staff as director of the nation-wide glaucoma detection project.

The merged organizations are now occupying new quarters at 16 East 40th Street, New York 16, N. Y. The library there will be named "The Conrad Berens Library." Dr. Berens is honorary chairman of the National Society's Committee on Basic and Clinical Research.

MISS HEVEY NAMED NSPB NURSE CONSULTANT

Miss Lena A. Hevey, M.A., R.N., has joined the staff of the National Society as nurse consultant.

A native of Franklin, New Hampshire, Miss Hevey holds a Master of Arts degree in Public Health Administration. She was director of public health nursing for the Binghampton, N. Y., City Health Department before coming to NSPB in July.

She has had extensive experience with voluntary and governmental public health agencies, voluntary social service agencies, as well in private and staff nursing.

FOURTH INTERNATIONAL CONGRESS OF ALLERGOLOGY

The Fourth International Congress of Allergology will be held at the Commodore Hotel in New York City, October 15–20 reports its president, Dr. Bernard N. Halpern of Paris.

Specialists from all over the world are scheduled to present papers on the latest findings in allergy research. Topics for discussion will range over the entire field of medicine, covering allergies which affect all parts of the body.

LONDON MEETINGS

IN EARLY July Dr. John W. Ferree, NSPB executive director, went to London and Oxford, England to attend a meeting of the executive committee of the International Association for Prevention of Blindness, the Oxford Ophthalmological Congress, and a conference of representatives of the World Council for the Welfare of the Blind.

As the International Association's secretary for the Western Hemisphere, Dr. Ferree presented at its meeting a report on prevention of blindness activities for the past year. Plans were discussed regarding the Association's participation in World Health Day, to be held in April 1962, which will have prevention of blindness as its theme.

New Delhi Congress

There was also consideration of the program for the meeting of the Association at the time of the International Congress of Ophthalmology in New Delhi, India, December 1962. Dr. A. M. Soliman of Cairo, Egypt, on behalf of his government, invited those attending the New Delhi Congress to participate as guests of his government in a five-day symposium following the Congress.

During a discussion of the proposed adoption of the International Classification of the Causes of Blindness, Dr. Ferree presented the views of the National Society's Committee on Operational Research, of which Dr. Ralph G. Hurlin is chairman. As a result a subcommittee was appointed to work out appropriate plans for expediting the preparation of a list and manual for final adoption by the International Association at the New Delhi meeting. The subcommittee members are Dr. J. Schappert-Kimmijser of the Netherlands, Dr. J. Francois of Belgium and Dr. A. E. MacDonald of Canada.

Trachoma Report

At the Oxford Ophthalmological Congress, Dr. Ferree reports, there was a most enlightening session on trachoma and the recent developments regarding its epidemiology and control measures, including the possibility of a successful vaccine. At this session Dr. C. Dwight Townes, chairman of the professional advisory committee, Kentucky Society for the Prevention of Blindness, gave a most interesting history of the eradication of trachoma in Kentucky. He noted that this work led to the formation of the first Kentucky Society for the Prevention of Blindness.

In London Dr. Ferree conferred with John E. Jarvis, executive director, World Council for the Welfare of the Blind; John Wilson, executive director and Peter Blatchford, public relations director of the Royal Commonwealth Society for the Blind. He conveyed to them the actions taken by the International Association with regard to the organization of World Health Day. It was agreed that the regional offices of the World Health Organization should act as the administrative channel to various areas of the world and that each office would organize a coordinating committee consisting of representatives of the World Health Organization, the International Association for Prevention of Blindness, and the World Council for

the Welfare of the Blind, with representatives from appropriate ophthalmological societies.

Dr. Ferree was asked to serve as liaison for the International Association with the regional office of WHO in Washington, D.C. Activities will embrace the Western Hemisphere in connection with World Health Day.

The National Society plans to observe World Health Day as an important feature of its annual conference, to be held in Indianapolis, April 11–13, 1962.

During his London visit Dr. Ferree discussed with Sir Stewart Duke-Elder mutual interests in the International Classification of the Causes of Blindness. He also conferred with Leonard Hodge, executive director of the British Safety Council, on developments of the Wise Owl Club in England.

WHY CATARACT PATIENTS FAIL TO ACCEPT SURGERY

A preliminary report on a study of "Why Cataract Patients Fail to Accept Surgery," conducted under the direction of Professor Irving Miller at the New York School of Social Work, was published in the Winter 1957 issue of *Sight-Saving Review*. The study was sponsored by the National Society for the Prevention of Blindness and financed by the New York Community Trust. The New York State Commission for the Blind cooperated.

Professor Miller has now completed the study, and it has been accepted by Columbia University as his dissertation for the degree of Doctor of Social Work. Reference copies are on file at the University, library of the New York School of Social Work, and at University Microfilms, Inc., 313 N. First Street, Ann Arbor, Michigan. Bound Xerox copies may be obtained from the latter for $9.90 each, plus 40 cents for handling. In ordering specify No. 61-3457.

JAMES L. LANDHERR

James L. Landherr, account executive of Wm. F. Fell Co., printers of *Sight-Saving Review*, died in Philadelphia on September 15 after a brief illness. He had been associated with the company for 44 years, having joined it as a boy of 17.

Wm. F. Fell Co. has printed the Review since it was first published in 1931, as well as numbers of other NSPB publications. For many years Mr. Landherr gave special attention to the Society's printing problems and his service was invaluable.

On his weekly visits to the New York office he dispensed good cheer and helpfulness. He was the Society's good friend and he will be greatly missed.

EYE CARE IN COLORADO

The eye health program of the Colorado public schools is reflected in a 1961 manual prepared by the State Departments of Education and Public Health to serve as a guide in the conservation of vision and hearing.

The vision screening tests approved and recommended for use in the schools are the standard Snellen, modified Snellen, plus sphere, and Massachusetts Vision Test battery. Annual testing is recommended where possible.

The responsibility for follow-up is a joint one of the school, the nursing service, and the parents. It is recommended that a report be sent to the parents of every child who is tested including children who pass the test.

An increasing number of local and state agencies in Colorado, it is stated, are offering service through identification and medical and educational planning for children with impaired vision.

Helping the Partially Seeing Child in the Regular Classroom

The classroom teacher is a key person in helping partially seeing children achieve success in school and later life. The Advisory Committee on Education of Partially Seeing Children of the National Society for the Prevention of Blindness presents these current views on what she can do to help these children when no special services are available.

IN THE school-age population the alert and knowledgeable teacher observes many pupils who obviously deviate from the so-called normal. Under best conditions qualified teachers of the partially seeing are available on the staff of the local school system. Thus the regular classroom teachers have the opportunity to discuss and plan with these specialists for the particular needs of children with vision problems. As a result such children are able to participate more fully with their classmates, and often the specific recommendations made for them benefit all of the children in the class.

When the services of a special teacher are not available the regular classroom teacher is responsible for meeting the needs of partially seeing children to the best of her ability. Frequently, because a visual limitation is not an obvious one it goes undetected.

These are the children whose capacity to achieve in school, commensurate with their ability, is limited by a vision problem. One of the commonly used criteria for identifying them for educational purposes is based on visual acuity, namely, corrected vision in the better eye of 20/70 or less.

It is estimated that one child in 500 of the school-age enrollment is in this category, yet records in the National Society for the Prevention of Blindness office indicate that in the public day school programs of the United States just over 8,600 are receiving special education services. The majority of these children with vision problems attend schools in their home communities yet they are not necessarily receiving the special services through which they will have an educational opportunity equivalent to that of their normally seeing companions. It is evident then that the regular classroom teacher is responsible for many who have not been identified. However, it should not be inferred that providing the partially seeing child with a large-print book or a low vision aid—valuable as either of these may be—is the solution to his educational problems.

A first step toward better identification is the encouragement of a total school-wide vision screening program, an essential of which is adequate follow-up of those referred for eye examination. The classroom teacher is an integral part of the vision screening program in that information from her observations of pupil behavior may identify those not found through screening.

Behavior Patterns

If a child manifests any of the following behavior patterns, signs or symptoms the teacher should note them on the record, make referrals if indicated, and inquire as to outcome in order to be guided by the results in adjusting educational procedures:

Attempts to brush away blur, rubs eyes excessively, frowns.

Shuts or covers one eye, tilts head or thrusts it forward when looking at near or distant objects.

Has difficulty in reading or in other work requiring close use of eyes.

Blinks more than usual, cries often, or is irritable when doing close work.

Stumbles or trips over small objects.

Holds books or small objects close to eyes.

Is unable to participate in games requiring distance vision.

Is unduly sensitive to light.

Has red-rimmed, encrusted, or swollen eyelids; recurring sties; inflamed or watery eyes; crossed eyes.

Complains that he cannot see well; that he experiences dizziness, headaches or nausea following close eye work; that he has blurred or double vision.

Sometimes a visual defect may manifest itself in restlessness, lack of interest in sports, in reading, or other activities requiring prolonged close use of the eyes.

Particular attention should be paid to previous classroom teacher's records of observations of the child's behavior in a variety of school situations.

Using the Health Record

The health record will provide valuable information for educational planning.

1. Review the cumulative health record of each child.

2. Check carefully on information concerning child's visual status and recommendations:

a. If a child wears glasses see if the record states whether the glasses should be worn constantly or only for certain types of visual activity.

b. If the record does not give specific information concerning wearing of glasses, contact the child's eye specialist, school physician, nurse or parents for this information.

c. The National Society for the Prevention of Blindness recommends that all children wearing glasses have the protection of safety lenses.

3. Note any directions regarding restrictions that are necessary to safeguard the child's residual sight:

a. Children with some types of degenerative eye conditions may be restricted in the amount of physical activity which involves jumping, bending or body-contact sports. If such specific restrictions are not entered on the child's health record, consult the nurse and/or physician serving the school and obtain instructions.

Visual Environment

In considering the procedures that follow it is well to keep in mind that special adjustments and materials are designed to help the child use the vision that he has to the best advantage.

1. Lighting

a. A minimum of 70 footcandles of evenly distributed and maintained light, free from glare and shadow, is needed for all children. The teacher can measure light with a light meter available from the local power company.

b. Shades, blinds or draperies should be used to take advantage of natural

light and control glare. (Medical records may indicate that some children see better in dim light.)

2. Room decoration and chalkboards

a. Clean, pastel-colored walls and white ceilings improve the level of illumination within the room.

b. Gray-green or blue-green chalkboards placed to avoid glare and receive good light should be used. There are paint preparations that can be applied to old blackboards if they must be utilized.

3. Glare areas

a. Furniture, wall and floor surfaces should have a dull finish to avoid glare.

Seating Arrangement

1. Preferential seating should be emphasized according to the eye condition.

2. Arrange desks and location of teacher so that pupils do not face the light. Avoid possibility of pupil's sitting in his own shadow.

3. Provide adjustable desk tops or desk easels to insure better light reflectance on work, and ability to bring material close enough to eyes while maintaining good posture.

4. Permit child to sit as near chalkboards and demonstrations as necessary to obtain the best view.

Use of Materials and Equipment

1. Educational materials and equipment. (A suggested list of sources is available from NSPB, publication P302.)

a. Reading

(1) Reading materials for *all* children should be carefully selected to assure clear type and pictures; adequate spacing between lines, words and letters; adequate margins; good quality paper with non-glossy finish; maximum contrast between background and printing.

(2) Many partially seeing children require larger-than-average print; books printed in 18- or 24-point type. The state or local director of special education can supply a list of large-type materials available to teachers.

(3) Distance of reading material from eyes need not be arbitrary but may be determined in part by the child's ease and comfort in seeing. Some children may need to hold books at closer range than others if they are to see clearly. In such cases it is important that the child maintain good posture while attaining comfortable reading distance. Adjustable book-racks are available commercially or can be made in school shops.

(4) In upper elementary grades, when reading load becomes heavier, readers may be appointed to assist partially seeing children with supplementary assignments. The reader may be a classmate who is taking the same curriculum and who reads well. In working with the partially seeing child the reader prepares his own assignment at the same time but, except for the actual reading of the material, he does not help the partially seeing child prepare his work. Check with local or state director of special education to ascertain whether or not state reimbursement is available to pay for reader service.

(5) Even in the lower grades children who are partially seeing can receive some needed help from their classmates through use of such standard procedures as arithmetic combination cards, learning games and spelling drill.

b. Writing

(1) The teacher's chalkboard writing should be large, preferably with a fairly broad stroke; she should read aloud the material she is putting on the board during demonstrations. Lists of spelling words, test questions and homework assignments for the partially seeing should be written in large, clear script or manuscript. The classroom teacher can cultivate the practice of preparing her original copy in enlarged form and this copy can be given directly to the partially seeing child after the teacher has transferred the material to the chalkboard.

(2) The amount of copy work should be limited for all children but especially for those with severe visual loss. The majority of partially seeing children should be encouraged to write larger than the average and use manuscript writing if this is simpler for them. Many school systems now teach manuscript writing to all primary grade children. When cursive writing is introduced the teacher should encourage the child to use either manuscript or cursive, whichever is easier, clearer and of proper size. The partially seeing child, however, must become familiar with cursive writing and not be prohibited from using it. Partially seeing children can do much of their arithmetic work directly on the chalkboard, thus obviating the need to copy problems or work with smaller figures.

c. Tape and Large-Type Typewriters

(1) Materials not otherwise available may be recorded on tape by volunteers from the high school or community service clubs. Since partially seeing children must obtain much information through hearing, having recorded material available relieves them of possible fatigue associated with prolonged reading tasks. Being able to listen several times to the tape insures greater understanding and learning from recorded material. This is an advantage over having material read aloud once. Much of the best in literature and music is available on tapes and in Talking Books. Inquire from state department as to availability of a Talking Book for a particular child.

(2) Typewriters, large-type or regular, are valuable tools for most partially seeing children since they provide opportunities to change eye focus, which is restful, as well as speed and ease in the preparation of assignments once the touch system of typing has been mastered. For partially seeing children who may have difficulty writing in a clear, legible fashion even in manuscript because of difficulty in seeing letters clearly, typing is particularly helpful.

(3) Duplicated materials should be in type size sufficiently large, dark and clear, and on opaque paper.

d. Low-Vision Aids

(1) Magnifiers, useful only to some partially seeing children, are not substitutes for suitable print size and/or teacher aid, and may not be tolerable for lengthy periods of use.

(2) Telescopic and microscopic lenses and other low-vision aids are useful to some children with low visual acuity. When prescribed, the teacher should encourage the child in their use.

e. Maps and Globes

Maps and globes should have little detail. Work maps can be duplicated

if boundaries and legends are clear and large enough to be seen with ease. Outline maps are available from most school supply companies or they can be drawn by the teacher.

f. Pencils, Pens and Paper

Pencils with soft, thick lead are preferable. Encourage the use of non-glossy paper, and when it is ruled choose a type with lines widely spaced and not too strong a color contrast. Pens that make thick strokes are now available even in ballpoint style.

2. Teaching Methods

Methods of teaching reading, writing and arithmetic are the same for all seeing children, but most partially seeing children will need some individual instruction in each of the three major subject matter areas.

a. Assignments

(1) If necessary to modify the assignment try to arrange so that the child who is partially seeing may do the task at the same time that his classmates are doing it. Modifying the assignment may mean shortening a drill lesson, i.e. arithmetic, or changing the requirements for a report from one prepared visually through reading to one using hearing, i.e. "book report" from Talking Books or tapes.

(2) Give clear assignments and be specific in classroom instruction so that each child understands what is required.

(3) Speak clearly; an individual with poor vision is quite dependent upon listening and should be helped to learn how to listen.

(4) The partially seeing child may participate safely in most of the regular grade activities, but some substitution may be necessary for sewing, mechanical drawing and other activities demanding close eye work and discrimination of fine detail.

b. Eye hygiene

(1) The principles and practices of eye hygiene should be a definite part of the instructional program for all children but are especially important for partially seeing children who must adjust constantly to a visual impairment. Material on the function and care of the eyes should be integrated whenever possible into units on health education, and opportunity should be given at all times to practice good eye health safety habits in all school activities.* As recommended earlier, all partially seeing children who wear glasses should have safety lenses set in sturdy, well constructed frames.

(2) Because many school children are normally farsighted they tire when required to do prolonged close eye work. Work should be planned so that they can vary the focus frequently by closing the eyes or by looking out of the windows at some distant object or scene. A change of focus from desk work to a chalkboard lesson, to suitable arts and crafts or to oral discussion, listening and physical activity is helpful. The change from a formal, subject-matter oriented type of program to the socialized, integrated activity or core-curriculum approach tends to reduce the eye load for all children and to provide for more flexible scheduling.

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* Teaching About Vision. Eye Health Committee, American School Health Association. June 1961. National Society for the Prevention of Blindness, New York.

3. Psychological and Achievement Tests

Some children may be able to read the material for the psychological and achievement tests given in the regular classroom while others may need tests that have been reproduced in large print; still others may need to be tested individually by the psychologist. (A suggested list of sources is available from NSPB, publication P302).

Considering the Individual Child

1. See to it that the child knows you are happy to have him in the group. Thus an environment of acceptance results which helps him develop a healthful mental attitude toward himself and his lack of good vision.

2. Appoint students in the class who are dependable and have ability to read any small print material which the partially seeing child may not be able to see.

3. Help the child accept himself as he is so that he will be able to judge what he can do well and recognize what he cannot expect to do as well as those with good vision.

4. Join others in the school and community in helping the partially seeing student determine and adopt attainable vocational goals and guide him into endeavors that will achieve them.

5. Expect and permit him to make contributions within his ability level. See that he does the assignment. Don't let him just "get by."

6. When assignments are unusually long, consider shortening them for the partially seeing pupil and grading accordingly. Due to the need for greater effort to see, some partially seeing children may not be able to work efficiently throughout the entire class period. They may make more errors if assignments are too long.

7. Remember that most partially seeing children need extra help to prepare them to live and work in the world. Depend upon the school team to assist you in teaching and helping them. The principal, school nurse and psychologist are a part of the team. The community agencies—voluntary and official—as well as physicians and parents can assist.

Eyes and Their Use

It is strongly recommended that all teachers have in their preparation a course on introduction to education of exceptional children, so that they may be alerted to partially seeing children and their educational problems. Such a course might help in overcoming some of the rather commonly held myths in regard to vision and its use.

Guidance and Counseling

A vision problem which is a serious educational impediment to one individual may not affect another to the same extent; the same type or degree of acuity and/or difficulty may have a different effect on different individuals. A deformed eye or reduced vision also may produce different emotional and social problems. Family, school and community attitudes considerably affect a child's total adjustment and his feelings about himself. In making every effort to emphasize the partially seeing child's assets and abilities the classroom teacher is demonstrating attitudes of approval, appreciation and acceptance which will, in turn, affect—for his benefit—the attitude of his classmates.

MYTHS	FACTS
Using the eyes is harmful.	Use does not injure the eye.
Glasses are a cure-all.	Glasses cannot correct all vision problems.
Discard glasses; eye defects and deficiencies are correctible without them.	Some refractive errors can be corrected by lenses; some muscle weaknesses can be corrected by eye exercises.
All partially seeing children need large-print books.	Some partially seeing children can read ordinary type. The decision is made for each child individually.
The largest type available is advisable for all children who are partially seeing.	Some partially seeing children can read ordinary type. The decision is made for each child individually.
A person with only one eye has to put undue strain on it.	A healthy eye is not harmed by use.
The nearsighted child should be restricted in all recreational activities.	Certain restrictions may be in order for the nearsighted but there are many recreational activities in which they are quite able to participate.
Planned classroom periods of rest for the normal child are not sufficient for the partially seeing.	If the partially seeing child is in good physical condition he does not need more rest than his classmates.
"Eye strain" is a medical term.	Eyes cannot be "strained," but may tire.
People with low vision have a sixth sense.	People with impairment of any sensory organ learn to make better use of the other senses.

The school, in cooperation with rehabilitation services, should begin early to consider avenues of future occupation for the partially seeing child. It is important to evaluate the abilities, interests and aspirations of each pupil along with his particular vision problem. Follow-up studies of various students after high school graduation or leaving school indicate that there are many opportunities open to the partially seeing child. Knowledge of and cooperation with all community resources such as professional, civic and service clubs, local and state official agencies providing job training and placement is necessary. Careful, thorough counseling, guidance and use of available resources before these pupils leave school can direct them to a life which will bring personal satisfaction, a contribution to their communities and valued citizenship in the seeing world to which they belong.

REFERENCES

Hathaway, Winifred. Education and Health of the Partially Seeing Child. Columbia University Press, New York. Revised 1959.

Vail, Derrick. The Truth About Your Eyes. Farrar, Straus and Cudahy, New York. Revised 1959.

Available through NSPB
16 East 40th Street, New York

Films

A Fair Chance for Tommy. 16 mm. sound motion picture, in black and white, 13 minutes. (Cleared for television). Presents some of the special techniques and materials used for partially seeing children in schools.

Johnny's New World. 16 mm. sound motion picture in color, 16 minutes. (Cleared for television). Explains need for early detection and treatment of children's eye problems.

Publications

Order by number where indicated

Fields of Work for the Partially Seeing. Alpha O. Fennefos. P313.

Finding and Helping the Partially Seeing Child. Helen Gibbons and Florence Cunningham. P311.

Medical Aspects of Reading Failures in Intelligent Children. George E. Park, M.D. P613.

Mental Health for Children with Vision Disability. Helen Gibbons. P315.

Recommended Basic Course for Preparation of Teachers of Partially Seeing. P304.

Revitalizing and Expanding Services for the Partially Seeing, Merle B. Karnes. P314.

Sight-Saving Review. Quarterly; $3.50 a year. A journal for all concerned directly or indirectly with eye care and protection.

Some Suggested Sources of Equipment for Partially Seeing Pupils (mimeographed). P302.

Teaching About Vision. Eye Health Committee, American School Health Association. June 1961. P616.

Vision and Vocational Training. James E. O'Neil. P110.

Vocabulary of Eye Terms. P607.

Vocational Guidance for the Partially Seeing. Ruth E. Giblin. P312.

Waukegan Finds Advantages in the Itinerant Teacher Plan. Arline Morin. P305.

Catalogue (of NSPB publications).

SUMMER COURSES

Advanced workshops for qualified teachers of partially seeing children were offered at two colleges during the summer in cooperation with the National Society for the Prevention of Blindness. Eight colleges and universities taught the basic course at summer sessions.

A total of 31 teachers from eleven states attended the advanced courses at Illinois State Normal University and at George Peabody College for Teachers in Nashville, Tenn. Each course lasted for two weeks and offered graduate credit.

Helen Gibbons, NSPB consultant in education, planned and coordinated the studies. The National Society allocated funds for the workshops and some scholarship aid for teachers attending. In Illinois the Illinois Society for the Prevention of Blindness and the Chicago Lighthouse for the Blind offered staff and financial assistance. Other official and professional groups and volunteer agencies contributed staff time to the projects.

The basic course, as recommended by the National Society, was taught at Syracuse University; the University of Pittsburgh; Wayne State University; University of Minnesota; Los Angeles State College; San Francisco State College; Illinois State Normal and George Peabody College.

1962 Advanced Workshops

Plans are now being made by NSPB for advanced workshops for teachers of the partially seeing, to be held during the summer of 1962. All such teachers who have not yet done so are urged to return the NSPB questionnaire indicating their preferences as to location, content of course and other details.

NOTES AND COMMENT

• Public Health Awards

Establishment of annual Bronfman Prizes for Public Health Achievement, a series of major awards to honor "outstanding current creative work leading directly to improved health for large numbers of people," was announced in June by the American Public Health Association. A grant from the Samuel Bronfman Foundation has made this possible.

Berwyn F. Mattison, M.D., executive director of the Association, said that from one to three prizes will be awarded annually, depending on availability of suitable candidates. Each prize will consist of a $5,000 cash award and a commemorative symbol, now being devised. First awards will be announced and presented during the 89th annual meeting of APHA in Detroit, November 13–17.

The Bronfman Prizes will be awarded for work of particular effectiveness in applying newer scientific knowledge to community health rather than for achievements in basic or laboratory research. With the establishment of the Bronfman Prizes, the Association this year continues to grant only one other award—the annual Sedgwick Memorial Medal in recognition of long and distinguished careers in public health.

In honoring application rather than discovery of new scientific knowledge the Foundation and the Association hope to increase understanding and appreciation of public health practice.

"Without detracting from the deserved attention given medical research and research scientists, the public must come to realize that new knowledge is useless until ways are found to apply it for the benefit of people everywhere. Public health practitioners who find ways of overcoming obstacles and bridging the gap between discovery and application, have long been unsung heroes of health and medicine. No professional practice has a more direct, intimate and immediate effect upon so many people as the application of modern public health skills."

• New Commission

The World Federation of Neurology in Belgium has announced the founding of the Problem Commission of Neuro-ophthalmology at Geneva in March. The purpose of the organization is to stimulate contact between ophthalmologists and neurologists and to increase the knowledge of neurological and neuro-ophthalmological diseases.

It is hoped that this union of the two sciences will facilitate the exchange of information and scientific material between the investigators of both disciplines, establish documentation centers, and organize symposia. The Commission also desires closer relations with neurogeneticists and neurochemists.

The Secretariats of the Commission will be directed by Professor A. Franceschetti, Clinique Ophthalmologique, 22 Rue Alcide Jentzer, Geneva, for the Eastern Hemisphere; and by Dr. Frank W. Newell, University of Chicago, 950 East 59th Street, Chicago 37, for the Western Hemisphere. They will be pleased to receive inquiries regarding the organization.

Other founding members are: Dr. Ludo van Bogaert, World Federation of Neurology president, Antwerp; W. R. Finks, New York; Dr. M. Callens, Antwerp; Dr. G. B. Bietti, Rome; Dr. P. Bregeat, Paris; Dr. P. Danis, Brussels; Dr. J. Francais, Gent; Dr. P. Guillot, Marseilles; Dr. H. Ikui, Fokoka; Dr. P. Kissel, Nancy; Dr. G. Offret, Paris; Dr. B. Streiff, Lausanne; Dr. C. J. Valdeavellano, Lima; and Dr. C. J. Van Slyke, Washington.

• Lions Sponsor Screening

A record total of over 4,200 persons were examined at the third annual glaucoma clinic sponsored by the Chattanooga, Tennessee Lions Clubs on May 25. Twelve ophthalmologists, nine ophthalmologic assistants, 26 student nurses, and hundreds of local volunteers participated in this well-organized program.

Dr. Arthur J. von Werssowetz, assistant director of the Chattanooga-Hamilton County Health Department, reports that 223 new glaucoma suspects were discovered. They will be followed-up by the health department.

The first mass glaucoma screening project sponsored by the Lions in Chattanooga was reported in the Winter 1959 issue of *Sight-Saving Review*. At this time 1,341 persons attended the clinic and 68 new cases of glaucoma were detected.

• Spending for Health

Americans are spending an increasing portion of their income on health services and this trend will continue according to George Bugbee, president of the Health Information Foundation.

In the September 1 issue of *Hospitals*, journal of the American Hospital Association, Mr. Bugbee reports that the annual expenditures for all types of medical care have risen in 30 years from three billion to 25 billion dollars. During this period, he states, private expenditures for hospital care have risen from 400 million to five and one-half billion dollars, representing approximately 30 cents of each dollar spent today for medical care.

Future expenditures for these services will inevitably be greatly affected by our expanding population which is expected to reach 235 million by 1975. The growing number of people over age 65 account for approximately nine per cent of the population. The upward trend of chronic illness in later life will mean even greater expenditures for medical care.

• Dr. Knighton on TV

Dr. Willis S. Knighton, chairman of the National Society's glaucoma committee, was one of four panelists on the Betty Furness show, "At Your Beck and Call," WNTA-TV Channel 13, on July 21.

An overwhelming public interest in eye problems was stimulated by Dr. Knighton's informative answers to viewers' questions. More than 250 relating to eye diseases and defects and eye care were called in during his two-hour appearance. Unfortunately, time did not permit Dr. Knighton's answering all of these, but he proved to be such a fine panelist that Betty Furness has invited him to return.

Six volunteers from the National Society for the Prevention of Blindness were at the telephones to record the questions. They were: Elizabeth Marvin, Dorothy Ver Nooy, Regina Wronieski, Margaret Banks, Denise Brady and Barbara Minton.

• AAOO Meeting

Representatives of the National Society for the Prevention of Blindness will help conduct two courses for physicians during the American Academy of Ophthalmology and Otolaryngology in Chicago, October 6–13, 1961.

A course in industrial ophthalmology will be taught by Ralph W. Ryan, M.D. and Hedwig S. Kuhn, M.D., both members of the NSPB's industrial advisory committee, and Roderick MacDonald Jr., M.D., executive director of the department of ophthalmology at the University of Louisville Medical Center.

For the second time, a course on "Educational Management of Partially Seeing Children" will be offered. Participating will be John W. Ferree, M.D., NSPB executive director, Helen Gibbons, consultant in education for the Society, and Benjamin Milder, M.D., of Washington University School of Medicine.

A breakfast meeting of chairmen of Professional Advisory Committees of state POB societies will be held October 8 at the Palmer House.

• Safety Check List

A safety check list designed as a public service to help parents protect and educate their small children to avoid injury in home accidents is announced by the National Society for Crippled Children and Adults.

Prepared by the Society's professional staff as part of its continuing accident prevention program, the list is available to parents free on request. It is one of a series of pamphlets, film spots and other materials devised to aid in slowing the mounting toll of accidents that kill, cripple, and otherwise injure young children. The Society points out that each year more than 40,000 children are permanently crippled in accidents and that accidents kill more children than the top seven childhood diseases combined. Most of these accidents happen at home where a child is presumed to be safest.

Many of the items on the list relate to eye hazards. Included are falls, burns, medicines and poisons, sharp instruments, moving mechanical parts, toys, and automobile accident precautions. Free copies may be obtained from Easter Seal Societies in every state or from the National Society for Crippled Children and Adults, 2023 West Ogden Avenue, Chicago 12, Illinois.

• Deadly Firecracker

According to *The Reflector*, published by the Pittsburgh Branch, Pennsylvania Association for the Blind, a new type of "torpedo" firecracker made in Japan is being sold in violation of the Pennsylvania fireworks law. Round-shaped, smaller than a marble, and brightly colored, the firecrackers can be easily mistaken for candy or bubble gum. They may explode in the mouth, or if swallowed they can be set off by the acids of the stomach.

These firecrackers can be ignited if dropped, thrown, trampled or heated and have enough explosive power to cause the loss of sight, or even life.

• Discrimination Test

In the *Newsletter* of the Pennsylvania Council for the Education of Visually Limited Children, Mrs. Virginia Bishop, vision consultant, Child Development Center, West Chester, reports that an experiment in visual

discrimination was recently conducted on 15 partially seeing children in Chester County public schools. Although the results are not conclusive, they may possibly confirm the theory that limited vision does not necessarily result in faulty visual discrimination.

The children's visual acuity ranged from 20/70 to 20/200 in the better eye corrected (where applicable). They were first to eighth grade students with an I.Q. range of 76 to 135 plus. No attempt was made to correlate specific visual abnormalities with results. The only similarity in cases was some type of visual limitation. Each child was scored in relation to his own ability and maturation.

Bender-Gestalt designs were drawn in black ink on 5″ by 7″ buff colored cards. The children were allowed unlimited time to copy the designs but were permitted no questions after the initial directions to "draw what you see" were given. The Bender-Gestalt scoring key was used.

All 15 children were able to copy all the designs satisfactorily to their own ability and maturity levels. For the purposes of the test they all "passed."

Although it is realized that 15 cases do not prove the point conclusively, states Mrs. Bishop, it is felt that enough evidence was presented to theorize that visual discrimination is not dependent on perfect visual acuity.

VISION SCREENING RECORD

The Children's Bureau of the U.S. Department of Health, Education, and Welfare reports that 7,671,554 children in 45 states were vision screened in 1959 under the school health programs. This represents 11.1 per cent of the total school-age population, and is a 52 per cent increase over the 5,048,304 children screened in 1958.

PAAO INTERIM CONGRESS

The Pan American Association of Ophthalmology will hold an Interim Congress in Lima, Peru, January 28 through February 3, 1962. All ophthalmologists are invited to attend.

The three official subjects are diagnosis and non-surgical therapy of glaucoma (round table), steroid therapy (symposium), and cornea (individual papers). Post-graduate courses will be given in English, Spanish and Portuguese. Simultaneous translations will be available during the discussion of the official subjects.

Free papers will also be presented. Applicants for papers of any type from the U.S.A. and Canada should send titles and abstracts to John M. McLean, M.D., 525 East 68th Street, New York 21, by October 30, 1961.

Movies should be submitted in advance to Dr. Benedict Rizzuti, chairman of the movies program, 160 Henry Street, Brooklyn 1, New York, for approval.

Scientific exhibits are under the chairmanship of A. D. Ruedemann, Jr., M.D., 1633 David Whitney Building, Detroit 26.

Official travel agent for the meeting is Edward R. Brown, Harvey Travel Bureau, 2005 West Gray, Houston 19, Texas.

IRRITANT ISOLATED

A second smog compound causing both eye irritation and plant damage has been isolated and synthesized by scientists at the University of California, Riverside, reports *California's Health.*

Called PPN (peroxypropionyl nitrate), the substance is related to PAN (peroxyacetyl nitrate), the first such double-acting smog component to be isolated. PPN and PAN are about equal as eye irritants, but the former is four times as toxic to plants.

Although the PPN found was in synthetic mixtures simulating natural smog, the scientists are confident it is part of the usual Los Angeles-type air pollution since its chemical make-up is closely related to other compounds found in polluted air.

AROUND THE WORLD

INTERNATIONAL

Eye Bank to Serve the World. Eyes from America will soon be providing sight for countless persons on all continents of the globe under the new program announced by Medico, Inc., international medical aid organization. The *Journal of the American Medical Association* reports that the recently established International Eye Bank with headquarters in Washington, D. C. will take care of requests for such aid from 16 countries. The international scope of this project has been made possible both by the advent of jet air transportation to all areas of the world and by new methods of preserving eye tissues to extend their usefulness.

In April, 1959, Dr. Charles E. Iliff of Johns Hopkins University took a number of dry corneas to Jordan and used them in successful transplants. Between 400 and 500 operations using the preserved corneas have been performed in Jordan, Pakistan, India, Lebanon, Israel, Egypt and the United States. Medico has recently had requests for such medical aid from South Africa, Japan, Puerto Rico, Guatemala, Panama, Philippine Islands, Ireland, Germany, Spain and Australia. Dr. Iliff, a member of Medico's board of directors and chairman of the International Eye Bank Committee, will be especially active in obtaining the services of qualified ophthalmologists who will be sent to the countries receiving aid to teach the corneal transplant technique to local eye surgeons.

Dr. John Harry King, director of the eye bank, points out that this training of surgeons, both in America and abroad, will be an important adjunct of the program. He emphasizes that this project will not take a single eye from eye bank programs or possible eye operations in this country. No appeals for eye donations will be made. Only those received from eye banks and hospitals not requiring them for fresh grafts will be used.

"Eye surgeons in this country will always be served first, and the International Eye Bank will not seek direct donors in this country," said Dr. Peter D. Comanduras, co-founder with the late Dr. Thomas A. Dooley of Medico. "Medico will merely be the agency for financing the packaging and shipping procedures, as well as sponsoring the medical teams to carry on the training program of eye surgeons in the host countries."

World-Wide Trachoma Programs. Antibiotic ointment supplied by the United Nations Children's Fund is helping to cure trachoma and related eye infections at a cost of about 20 cents per person for a year's treatment, according to a recent report (Compendium, Vol. II 1960).

Effective and economical methods for large-scale control are still under study. Trachoma varies widely in epidemiology and a set course of treatment does not give the same results in all areas. It is therefore necessary to determine early in each project the most efficient course for treating the local forms of the disease.

It was discovered that a short treatment period was effective in North Africa and in Spain. This led to the intermittent treatment schedule—an-

tibiotic ointment instilled twice daily on three consecutive days a month for six months. However, relapses and reinfections are common in some parts of rural Africa and Asia and mass treatment on a more or less permanent basis is costly. To meet this problem the Moroccan people are instructed by UNICEF trachoma teams the second year to apply the ointment themselves. In the third year they purchase further supplies at a reduced price from village shops subsidized by the government.

School children are the most accessible subjects for collective treatment. The largest program has been in Taiwan where all school children, numbering over two million, had been examined and more than one million treated by 1956. In addition, blanket treatment of families was applied in communities with a particularly high trachoma prevalence.

In areas where the incidence of the disease is moderate or low the families of trachomatous children are examined by a doctor and instructed in self-treatment and home sanitation. They are visited monthly by specially trained nursing aides who supply the ointment and are reexamined at six-month intervals by the doctor. This approach is now on trial in Spain, Turkey and Yugoslavia.

The successful cultivation of the trachoma virus, recently isolated in several areas, may prove a turning point in developing effective immunization agents.

The annual allocations of UNICEF for projects to control trachoma and related eye diseases averaged $250,000 for the three-year period 1957–59, slightly more than one per cent of the total program allotment. Although considerable work has been done on a public health scale in North Africa and Taiwan, China, only a small beginning has been made globally. Of the two million cases treated in 1959, one and a half million were children. By early 1960, the 10 UNICEF-aided projects had treated seven and a third million persons—less than two per cent of the estimated number of victims.

GREAT BRITAIN

Bowman Lecture. The Ophthalmological Society of the United Kingdom held its 81st Annual Congress at the headquarters of the Royal Society of Medicine in London, April 13–15. The *British Medical Journal* reports that the meeting included a symposium on late complications of aphakia, a discussion on neovascularization in ocular disease, the Bowman Lecture and various papers.

This year's Bowman Lecture was delivered by Dr. Ida Mann of Australia; the subject "Climates, Cultures, and Eye Disease," underlined the varying habits and climates affecting the people on that continent.

Dr. Mann's studies of full-blooded Australians, most of whom were intermingled with European stock, revealed that practically all were hypermetropic. There was no incidence of convergent squint among them. However, about two per cent of the white population was so affected, half of these cases having an hereditary basis. This would suggest an underlying anatomical causation in contrast to divergent squint, which was much more regularly distributed among different racial groups.

Myopia, virtually confined to the white population, was responsible for

4.8 per cent of the blindness, while its frequency is double this in England. Glaucoma was almost absent from the aboriginals in Australia and New Guinea, causing one per cent of the blindness in contrast to 13.5 per cent in England. Australian aboriginals were relatively free of sympathetic ophthalmitis in spite of an ample supply of untreated perforating wounds.

Dr. Mann discovered other conditions attributable to the geography, among them nutritional diseases, a high incidence of pterygium and pingueculum in the Western part of the continent, and virus conjunctivitis.

Retinal Burns after Eclipse. A letter in the February 11 issue of the *British Medical Journal* refers to the considerable number of cases of small paramacular solar burns seen in the eyes of persons who viewed the eclipse of October 2, 1959 with inadequate filtering devices. The majority of these cases were children, and follow-up has demonstrated that many of these lesions have persisted, with in most cases a small residual scotoma.

The writer notes the partial eclipse due in Britain on February 15 and draws attention to the grave dangers of looking at the sun with the naked eye or inadequate dark glasses.

INDIA

POB Society Organized. A society corresponding to our NSPB in name and purpose has recently been established in New Delhi under the auspices of the Indian National Association for the Blind. Dr. John W. Ferree, NSPB executive director, has accepted an invitation to become an honorary member of the new organization.

The National Society for the Prevention of Blindness in India aims "to undertake and promote activities for the prevention of blindness; to encourage and conduct research; to publish studies, periodicals, reports and other literature relating to the problem, and to disseminate knowledge concerning all matters pertaining to the care and use of the eyes."

POLAND

Vision in Industry. A report on the problems of protecting the eyesight of industrial workers was recently published by members of the social section of the Polish Ophthalmologic Association in *Zdrowie Publiczne* (Public Health). The report was sent to *Sight-Saving Review* by Drs. L. Rostkowski and C. W. Korczak, chairman and secretary of the association.

According to the journal, 1.3 cases of eye trauma occurred per 1,000 working persons in Poland in 1956, 4.5 per cent of the total number of industrial accidents. Machines, hand tools and a lack of supervision were reportedly responsible.

Employers are now required by the Central Institute of Work Protection to record eye accidents and occupational eye diseases. They must also conduct research on the harmful effects of various industrial processes, on the methods of preventing eye trauma, and on the production and distribution of protective eyewear.

In Poland approximately 250,000 pairs of safety glasses are produced annually. An educational campaign is conducted to encourage workers to use this equipment. In large organizations "oculistic advisory centers" are available for therapy and prophylaxis. In small concerns general physicians and nurses administer first aid in cases of eye injury.

CURRENT ARTICLES

Use of Intramuscular Chymotrypsin in Controlling Tissue Reaction Following Strabismus Surgery. E. G. Fortier. *American Journal of Ophthalmology.* Vol. 51, p. 106. January 1961.

Presented are some introductory clinical studies in which chymotrypsin was utilized following major strabismus surgery, together with the presently available clinical and experimental evidence upon which this chemical's action is based.

Five cases were treated with chymotrypsin following strabismus surgery and three control cases were supplied for comparison. Although postoperative conjunctival injection was not modified nor its duration shortened after treatment with the enzyme, postoperative edema was decreased in both amount and duration. Chymotrypsin exhibited a beneficial effect upon postoperative traumatic response when utilized early. Patients appeared to experience much less ocular discomfort and were able to cooperate much better in early postoperative stages, thus facilitating the surgeon's examinations.

Further studies are being made.

Alpha Chymotrypsin in Intraocular Foreign Body Extraction. H. L. Hilgartner and H. E. Thompson, Jr. *American Journal of Ophthalmology.* Vol. 51, p. 147. January 1961.

A case of an intraocular foreign body is reported in which the cornea, iris, lens and vitreous were penetrated and the metallic object was lodged in the vitreous chamber.

By using alpha chymotrypsin, extraction of the traumatic cataract was accomplished with an erisophake en capsule without loss of vitreous. A magnet was used to excise the foreign body through the cataract incision, thereby leaving the sclera, choroid, and the retina intact.

Chymotrypsin in Various Ophthalmic Surgical Procedures. W. L. Hughes, E. L. Lewis and J. Amdur. *American Journal of Ophthalmology.* Vol. 51, p. 103. January 1961.

This study was undertaken to evaluate systemic chymotrypsin as a routine proteolytic, anti-inflammatory agent.

A total of 115 consecutive surgical cases were treated with chymotrypsin. These included 41 muscles, 28 plastic ophthalmic procedures, 39 lens procedures and seven corneal transplants. The enzyme was administered in an aqueous suspension intramuscularly on the day of operation and on the first postoperative day.

In 66 per cent of the muscle cases, 50 per cent of the plastic cases, and 33.3 per cent of the lens cases there was a distinct diminution in the amount and duration of tissue reaction. No untoward systemic reactions occurred in the series. The greatest anti-inflammatory effect of this drug was manifested in multiple muscle surgery and was particularly noticeable in surgery of the inferior oblique where there had been considerable swelling in the untreated cases, and in intraocular surgery.

The authors believe that the results are encouraging and this therapy would be particularly advantageous in cases in which a considerable post-

operative reaction would normally be expected. Further research is being conducted.

Alpha-Chymotrypsin in Cataract Surgery. D. Pierse and H. N. O'Donoghue. *British Medical Journal.* No. 5213, p. 1629. December 3, 1960.

Universal agreement has not been reached on the possible adverse effects of alpha-chymotrypsin. Animal and in vitro experiments suggest that the enzyme is not restricted to the zonule, but is capable of attacking other structures such as the vitreous. The suggested side-effects are delayed wound healing, an increase of striate keratitis, and damage to the vitreous.

This study of 65 cataract extractions with alpha-chymotrypsin was conducted to provide further clinical observations on the method. Vitreous loss occurred in one case and rupture of the capsule in four cases. Immediate post-operative complications included iris prolapse in one case, iritis in two, mild striate keratitis in four, severe keratitis in one, hyphema in seven, and delayed healing in one case.

A careful slit-lamp study revealed that no operative complications were attributable to the enzyme. The visual results compared favorably with previous studies in which the enzyme was not used.

Stability of Alpha-Chymotrypsin. L. F. Watts, Jr. and C. J. Martin. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 24. January 1961.

Experimental studies have shown that the Zolyse brand of *a*-chymotrypsin preparation can be used repeatedly after solubilization to a 1:5,000 dilution.

Two separate samples of *a*-chymotrypsin were used—one for stability studies at 25° C and the other for comparable purposes at 2° C. At 2° C inactivation of the stock enzyme solution could not be detected within the test period of 31 days. Storage at 25° C produced a loss in enzyme activity, but this was not apparent until after four days.

The refrigerated preparations were used in 37 cataract extractions. In 34 cases the lenses were delivered intracapsularly. There were no postoperative complications attributable to the *a*-chymotrypsin solution which had been under refrigeration at 2° C from one to 21 days.

Alpha-Chymotrypsin in Cataract Surgery. L. H. Lake. *Bulletin of the New York Academy of Medicine.* Vol. 37, p. 15. January 1961.

The James W. Smith Memorial Lecture was presented at the meeting of the section on ophthalmology, New York Academy of Medicine, February, 1960.

The results of 100 cataract extractions using alpha-chymotrypsin (Chymo-Trypure Novo, concentration 1:5,000) according to Barraquer's technique were compared with 100 operations performed without the enzyme. In the control series 65 per cent of the extractions were intracapsular, 35 per cent extracapsular. This compares with 92 per cent intracapsular and eight per cent extracapsular in the series using chymotrypsin.

It is concluded that a high percentage of intracapsular extractions can be expected when the drug is used. These appear to be free from many of the disadvantages of the old technique where the zonule had to be ruptured mechanically. The author considers alpha-chymotrypsin a valuable ad-

junct to successful cataract surgery, particularly in younger patients, where it would not normally be possible to obtain an intracapsular extraction, or where there is a high incidence of postoperative retinal detachment. However, the selection of cases for use of the drug must remain a matter of choice for the individual surgeon.

Cataracta Complicata and Corticosteroids. I. A. Abrahamson, Jr. and I. A. Abrahamson, Sr. *The Eye, Ear, Nose and Throat Monthly.* Vol. 40, p. 266. April 1961.

The development of posterior subcapsular cataracts (P.S.C.) in rheumatoid arthritic patients under steroid therapy has raised several important questions: Is there a causal relationship between steroid therapy and P.S.C.? Is P.S.C. a common complication of rheumatoid arthritis or other disease entities, with steroid therapy unrelated etiologically or acting only as a secondary causative factor? Is the occurrence of P.S.C. unrelated to both steroid therapy and rheumatoid arthritis?

This study revealed that P.S.C. or cataracta complicata does develop in persons not receiving steroid therapy. In the control series 10 of the 260 patients had P.S.C. In six cases their development was secondary to other conditions. In the steroid treated group five of the 86 patients exhibited this form of cataract. The daily dosage varied from 5 mg. to 30 mg. of prednisone or equivalent dosages of other steroids administered for periods of six months to five years. Of the 23 arthritic patients in this group, three had P.S.C.

Although this series of patients was small, it also contained diverse illnesses treated with steroids. The fact that a low incidence of P.S.C. was found in this group appears to indicate that steroids per se may not be the causative agents. However, the question with regard to the causal role of rheumatoid arthritis remains open. In the authors' opinion the patients probably would have developed P.S.C. without steroid therapy, although steroids may be an additional provocative factor.

Aspiration of Congenital or Soft Cataracts: A New Technique. H. G. Scheie. *American Journal of Ophthalmology.* Vol. 50, p. 1048. December 1960.

A new technique is presented for aspirating cataracts in individuals under 30 years of age before the nucleus is firmly formed.

The lens is aspirated using a specially made No. 19 needle inserted through a scleral puncture made by a knife needle 1.5 mm. behind the limbus. This small opening practically eliminates wound complications and precludes vitreous loss. If the lens is not completely cataractous, a preliminary capsulotomy is done to permit softening of the lens by aqueous. When the lens has become completely opaque, which requires from two or three to several days, it can be aspirated quite easily leaving little or no lens material in the anterior chamber.

The procedure varies somewhat depending upon whether or not the cataract is complete and whether or not good pupillary dilation can be obtained preoperatively by mydriatics.

Various cataract extraction techniques are discussed and the author evaluates the procedures with which he has had experience.

Corneal Sensitivity After Cataract Extraction. K. E. Schirmer, and L. D. Mellor. *A.M.A. Archives of Ophthalmology*. Vol. 65, p. 433. March 1961.

Fifty cataract patients were examined postoperatively. The corneal sensitivity was obtained by measuring a minimum of six to eight points on the same cornea. The slightest sensation felt by the patient was registered as threshold.

A lessened corneal sensitivity was demonstrated in the areas and sections adjacent to the corneal scar. This seems to be fairly consistent during the two years of follow-up.

A slight overlapping of corneal innervation was demonstrated. There is increased tolerance to corneal contact lenses in eyes operated on.

Corneal sensitivity seems lessened after prolonged secondary glaucoma. Corneal sections and limbal sections showed the same results as to the reduction of sensitivity.

Intracapsular Extraction of Intumescent Cataract by Application of Low Temperature. T. Krwawicz. *British Journal of Ophthalmology*. Vol. 45, p. 279. April 1961.

A new method is described of extracting intumescent cataract by means of a pencil-shaped, ball-tipped metal instrument called the cryoextractor. It is refrigerated in a mixture of dry ice and methyl alcohol. When the lens capsule is touched with the ice-coated tip of the instrument, an immediate local freezing occurs. The capsule and the subjacent part of the cataractous mass attach themselves to the cold metal, and easy intracapsular extraction is insured. This instrument greatly reduces risk of rupture of the capsule.

Fifty extractions were performed by this method. In only two cases did the capsule rupture near the lower part of the equator during the final stage of the operation and in both cases it was possible to remove the cataract completely due to its firm attachment to the cryoextractor. Other complications included one case of vitreous loss and two cases of choroidal detachment. Full visual acuity was obtained in 49 patients.

A new series is in progress in which this technique is combined with zonulolysis. The results will be published.

Glaucoma Control. O. Hoffman. *Canadian Journal of Public Health*. Vol. 52, p. 23. January 1961.

Glaucoma has been reported responsible for 11 per cent of the blindness in Canada, in comparison to the 13 to 15 per cent incidence in the United States. On the basis of the 1959 census of 5,400,000 people over age 40, it is probable that there are over 100,000 Canadians with the disease.

Effective glaucoma controls are evolving in the communities. In the clinical field, ophthalmologists are giving much attention to the problems of diagnosis and treatment. Some are engaged in research, others are contributing their time and skill to the operation of eye and glaucoma clinics, and to the instruction of ophthalmologists in training.

The number of out-patient glaucoma clinics in Canada has been considerably augmented through the assistance of the national health grants program of the Federal Department of National Health and Welfare, and the cooperation of the provincial governments. The first clinic supported by this program was established in 1950.

At the present time 14 glaucoma clinics are operated in hospitals in major cities from coast to coast.

Glaucoma Detection is Everybody's Business. W. L. Mould. *New York State Journal of Medicine.* Vol. 61, p. 1239. April 15, 1961.

The author, an ophthalmologist, recommends that tonometry be included in the physical examinations of all persons over the age of 40. The test can be mastered easily and performed in the office of most physicians. Patients having an intraocular pressure above 22 mm. of mercury should be referred to an ophthalmologist.

While glaucoma treatment should be directed by the specialist, Dr. Mould maintains that it will not be possible to control this condition until the general practitioner and the internist routinely perform tonometry tests to detect its presence.

The Clinical Use of Urea for Reduction of Intraocular Pressure. M. D. Davis, P. A. Duehr and M. Javid. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 526. April 1961.

Intravenous urea solution is effective in lowering intraocular pressure, even in eyes whose normal outflow channels are completely blocked. The most useful application of urea has been in cases of acute angle-closure glaucoma, where pressure has been reduced to normal within one hour.

In eyes with high tensions in which a filtering operation or cataract extraction is to be done, surgery is facilitated by the marked reduction in pressure which can be produced by intravenous urea given immediately preoperatively. Urea has also proved useful in an occasional scleral buckling operation when subretinal fluid was scant or unusually difficult to drain and paracentesis contraindicated. It has been very helpful in orbital surgery, allowing more adequate exploration via the anterior route.

With ordinary care in preparation and administration urea is reported to be a safe drug. The contraindications to its use are said to be few, and complications following its use rare.

Fitting Contact Lenses: Practical Points. P. W. Malone. *Texas State Journal of Medicine.* Vol. 56, p. 661. August 1960.

Improvement in materials and fitting techniques for contact lenses and patient demand for them has made it almost imperative, the author states, that ophthalmologists equip their offices for such practice. The lenses have greatly aided such conditions as keratoconus, monocular and binocular aphakia, myopia, lid disease, irregular astigmatism and corneal scars. Patients in hazardous occupations, athletes and entertainers often find it advantageous to wear them.

It is important that the ophthalmologist screen patients in order to eliminate the type of individual he thinks will be unhappy with the lenses. Generally, they should not be fitted on patients whose regular spectacle lenses are of low dioptic value because the benefit received does not justify the patience required to adjust. The aged, especially those in the bifocal group, do not adjust readily to contact lenses, nor do persons with certain diseases such as ocular allergy, a pterygium which extends to the cornea, general nervousness and debilitation, and any inflammatory condition of the globe or adnexa.

In the author's experience the most important single factor in satisfactorily fitting contact lenses is a high degree of motivation by the patient. It is not unusual to find patients wearing the lenses for eight to 16 hours with little or no discomfort. Contact lenses are an important adjunct in the practice of ophthalmology, the author concludes, and ophthalmologists should fit them at the patient's request.

Contact Lenses—Threat to Vision? H. S. Kuhn. *National Safety News.* Vol. 83, p. 23. June 1961.

The use of contact lenses is contraindicated in heavy industries, chemical industries, foundries, and plants with dusty environments. The author, an industrial ophthalmologist, believes this to be true even though the required eye protective equipment is worn. Safety eyewear reduces the chance of a severe penetrating injury, but may not greatly reduce the problem of getting dust and dirt from the air or eyebrows into the eye. Severe corneal damage can occur if a foreign particle gets under the contact lens or if a caustic chemical or concentrated acid is splashed into the eye.

Dr. Kuhn advises that management study its own work environment and, through the advice of its consulting ophthalmologist, reach a conclusion concerning the wearing of contact lenses on the job.

Contact Lenses. M. Feldstein, A. Barnert and H. Agatston. *New York State Journal of Medicine.* Vol. 61, p. 1721. May 15, 1961.

The authors emphasize that the fitting of contact lenses is definitely an ophthalmologic procedure because of the hazards involved. These are reduced to reasonable levels if the patient is under direct ophthalmologic care during the fitting process and is kept under periodic observation for the period of wear.

At the present time corneal lenses will not replace ordinary spectacles for the eyeglass-wearing population, the authors state. However, because of the great demand for these lenses, it is important that the medical profession take the lead in seeing that the public receives protection against ocular damage from their use.

Evisceration of the Eye. J. L. Bussey. *Texas State Journal of Medicine.* Vol. 56, p. 667. August 1960.

The Burch procedure was employed in 13 eviscerations. In one case there was a breakdown of the wound believed to have resulted from loss of tissue at the limbus. This was repaired satisfactorily with a conjunctival flap. There has been no occurrence of sympathetic ophthalmia in almost a year of follow-up.

Evisceration reportedly eliminates some of the undesirable effects of enucleation and offers better cosmesis and motility, less irritation and discharge, and better patient acceptance.

Caring for the Patient with Retinal Detachment. D. Seide. *RN.* Vol. 24, p. 56. February 1961.

Nursing care is vital in the retinal detachment patient's recovery. In addition to attending to physical needs the nurse provides constant emotional support which often means answering questions about the eye, the condition, and the operation.

The author, a registered nurse, observed retinal detachment procedures along with pre- and post-operative

nursing care at Manhattan Eye, Ear, and Throat Hospital in New York. She explains in detail the techniques and equipment used.

Familial Retinal Detachment. A. I. Friedmann and E. Epstein. *American Journal of Ophthalmology.* Vol. 51, p. 33. January 1961.

The familial incidence of retinal detachment is reported. It illustrates the dominant nature of the defect as indicated by the occurrence of the disease in the two families of a twice-married woman; the anticipation of the disease as exhibited in the affected second generation; the relatively small degree of myopia that occurred in most cases; and the common feature of retinal degenerative changes present in all those affected.

The tendency of retinal detachments occurring more frequently in myopic eyes is well-known. Whether in this family the myopia and the retinal degeneration are linked in the same gene, or in closely associated genes, is mere speculation, but the reality of the linkage is undoubted. The other unanswered problem is whether retinal degeneration and myopia are linked in a similar way in the general population and, if so, whether this myopia is of a particular type, such as axial as compared to refractive myopia.

Scleral Buckling Procedures. C. L. Schepens, I. D. Okamura, R. J. Brockhurst and C. D. J. Regan. *A.M.A. Archives of Ophthalmology.* Vol. 64, p. 868. December 1960.

The use of polyester fiber suture material in about 2,500 retina operations indicates that it advantageously replaces silk for all nonabsorbable buried sutures. Reinforcements of the same material have also proved valuable.

Silicone implants, in straight and curved shapes, have been used in more than 1,500 cases. Ungrooved straight shapes are suggested for use only in the trap-door procedure. Grooved straight shapes are used as implants beneath a circling polyethylene tube. Curved shapes, carved out of silicone "caps," are used when large implants are necessary.

Recoveries have been quicker, complications fewer, and the chances of permanently reattaching the retina have been better with a silicone implant than with polyethylene tubing used alone.

Retina and Optic Nerve. (Annual Review.) B. A. Klien. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 717. May 1961.

In this annual review the author refers to 433 books and articles on the retina and optic nerve that appeared during 1959–1960.

A new approach to retinal regeneration and ocular transplantation was made in the experiments of Royo and Quay which suggest the feasibility of retinal repair in adult mammals by fetal grafts.

A series of publications on electroretinography have added to the still incomplete knowledge of the electrical phenomena of the retina. Jayle and Boyer described the method of dynamic electroretinography which represents a more sensitive exploration of retinal function than static electroretinography.

The retinal manifestations of vascular and systemic disease were reported on including arterial occlusion, venous

occlusion, Eales' disease, hypertension and arteriosclerosis, diabetes, blood dyscrasias and collagen diseases.

Reports on the results of treatment with light coagulation in a variety of conditions have become more frequent and comprehensive during the past year.

A number of publications dealt with the widening scope of ultrasonic devices in the diagnosis of retinal diseases. Oksala and his co-workers have demonstrated the usefulness of echograms in the differential diagnosis of retinal detachments, intraocular foreign bodies, and posterior scleral disease.

Research on the optic nerve covered the pathogenesis of papilledema, optic neuritis, atrophy, and trauma.

A New Electronic Instrument for Precise Surgery for Retinal Detachment. R. V. Hill, O. Rich, Jr., K. C. Swan and D. Weeks. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 680. May 1961.

An instrument with simple controls has been designed for delivery of precise packets of radio-frequency energy to the eye for cyclodiathermy or for the treatment of retinal detachment. Unlike conventional surgical diathermy, voltages at the tip of the surgical probe do not fluctuate with variations in tissue impedance and are accurately reflected by a simple meter. The current can be applied continuously or the surgeon may utilize either of two electronic timing devices which are said to provide extremely precise control.

The instrument is being used in both clinical and laboratory studies at the University of Oregon Medical School.

Intravenous Urea in Retinal Detachment Surgery. M. A. Galin and I. Baras. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 652. May 1961.

The adjunctive use of urea as an osmotic hypotensive agent in the performance of certain types of retinal detachment surgery is described. Its use has greatly facilitated the performance of the polyviol type of buckling procedure, which does not require the drainage of subretinal fluid. The length of the operative procedure and patient morbidity is reduced.

Urea is reported to be an ideal osmotic agent because of its low molecular weight, relatively poor ocular penetrance and safety. Its contraindications are few and are related to the patient's ability to withstand a marked change in blood osmolality.

Aqueous and Blood Urea Nitrogen Levels after Intravenous Urea Administration. M. A. Galin, H. D. Nano and R. A. Davidson. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 805. June 1961.

A comparison of blood and aqueous urea nitrogen levels following the rapid infusion of urea is reported. Twenty-three patients hospitalized for routine cataract extraction were the subjects of this study, and control data was obtained from nine additional patients.

A reduced aqueous to blood concentration ratio occurred during the first hour and slowly reached pretreatment levels in about five hours. At virtually all blood levels of urea, the aqueous deficit for this substance was maintained. These findings are said to be consistent with the presumed osmotic explanation for the pressure lowering effects of urea.

Late Clouding of Experimental Corneal Grafts. E. Nelken, D. Nelken, I. C. Michaelson and J. Gurevitch. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 584. April 1961.

Perforating keratoplasty operations were performed on 214 rabbits of known blood groups in order to determine whether red cell antigens in the donor cornea are capable of causing late clouding of corneal grafts.

Isoantibodies were produced in the serum of the experimental animals by immunizing them with incompatible blood. The rabbits were divided into six groups: autografts, homografts without any regard to blood groups, homografts from blood group incompatible rabbits, homografts in previously immunized rabbits, and autografts and homografts in vascularized corneas.

Results indicate that in avascular corneas blood group incompatibility causes late clouding of grafts in cases where the isoantibody titer of the recipient is high. An immune reaction probably caused by leukocytes was also observed. In vascularized corneas all homografts failed. Autografts were successful.

Clinical Evaluation of the Precipitin Test in the Postoperative Course of Keratoplasty. J. Tsutsui and S. Watanabe. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 375. March 1961.

The precipitin test was given to 14 persons with homokeratoplasty in an effort to determine more precisely the factors involved in postoperative graft opacity. Serum antibody titer was positive in eight of the 14 cases between the fifth and 20th postoperative days and reverted to negative between the 10th and 50th postoperative days. Early in the precipitin-positive period, iridocyclitis appeared frequently, but no case developed permanent opacity during this period under steroid medication. Four cases resulting in permanent opacity of the graft were unrelated to immunity.

Steroid medication may be a significant aid in the prevention of permanent opacity caused by donor-recipient reaction. The clinical use of precipitin reaction is beneficial as a means of preventing postoperative complication by providing a guide to the type and duration of steroid medication and as a diagnostic aid in determining the cause of postoperative graft opacity.

Influence of Pyrogen on Healing of Corneal Ulcers. P. U. Fechner and I. Fechner. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 392. March 1961.

An attempt was made to assess the influence of bacterial pyrogen on the healing of artifically induced corneal ulcers in guinea pigs. Standardized thermal injuries were produced in two groups of 40 animals each involving approximately 70 eyes in each group. From the first to the sixth day the test group was treated with intraperitoneal injections of the pyrogen Pyrexal, a lipopolysaccharide of the endotoxin of Salmonella abortus equi; the other group served as controls.

At the end of the period of treatment, approximately the seventh day, there were definite differences between the two groups. The mean intensity of fluorescence in the treated group was less than that in the control group. Of the corneal ulcers in the treated animals, 63.2 per cent were healed as

compared with 56.6 per cent in the controls. Only 11 per cent of the test animals developed intracorneal abscesses, compared with 22.5 per cent of the controls. In four control eyes the ulcer perforated into the anterior chamber during the process of healing; none perforated in the treated group. No corneal edema was found in 38.4 per cent of the pyrogen-treated animals, compared with 23.6 per cent of the controls. The corneal vascularization was significantly less pronounced in the treated group.

The findings indicate that bacterial pyrogens can intensify reparative processes in the cornea and exert beneficial effects on corneal diseases.

The Lens and Vitreous. (Annual Review.) A. R. Irvine, Jr. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 592. April 1961.

The importance of preoperative slit-lamp examination for successful cataract surgery was stressed in the literature. A new method was described by Dobree for making the section and inserting sutures.

The clinical indications for the use of *a*-chymotrypsin in cataract extraction were more clearly defined. Some reports stressed its contraindication in children and its limited value in the aged; some surgeons have not attributed complications to its use and think it beneficial in all cataract surgery.

A number of new instruments were described. These include ballpoint eye scissors for enlarging corneal sections; a zonule stripper and a reverse shank designed to strip the zonules attached inferiorly; and capsulotomy scissors to facilitate the removal of corneoscleral sutures. An inverted knife was devised to permit a corneal section upon the left eye using the right hand without the surgeon's changing his position from the patient's head.

The need for a standard sterile technique in obtaining and storing vitreous was stressed. There is some indication that human vitreous possesses self-sterilizing properties when stored at 4 C.

Visualization of the interior of the light-opaque eye and orbit is afforded by ophthalmic application of ultrasound. Retinal detachment, tumors, and foreign bodies may be visualized and the differential diagnosis between vitreous hemorrhage, retinal detachments, and tumors may be facilitated. Ophthalmic supervision is necessary when ultrasound is used about the eye because prolonged use may produce intraocular lesions.

An extensive reference list follows this annual review.

Pseudomonas Eye Infection as a Cause of Death in Premature Infants. R. P. Burns and D. H. Rhodes, Jr. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 517. April 1961.

The relatively unknown clinical entity of Pseudomonas aeruginosa ocular infection is described as a potentially lethal occurrence in the premature infant which the ophthalmologist and pediatrician should be aware of. In the hospital nursery the baby is exposed to the organism. Increased humidity in premature nurseries may be a factor in spreading the infection. The water tubs of isolettes, and the nebulizers in the cribs have been found to contain Pseudomonas.

Reported are four cases of the eye infection ranging from conjunctivitis through corneal abscess to endophthalmitis with orbital cellulitis, all of

which ended in fatal septicemia. Five nonfatal cases are described and therapy of Pseudomonas infections is discussed.

Evidence is advanced that the species of Pseudomonas which do not fit the criteria for designation as the species aeruginosa may be less pathogenic.

They Save Infant Eyes. J. P. Blank. *Saturday Evening Post.* Vol. 234, p. 17. March 25, 1961.

Retinoblastoma affects one child out of every 23,000. Prior to research done by the Institute of Ophthalmology, Columbia-Presbyterian Medical Center, the chances for preserving sight in such cases were generally poor.

The chief weapon against the disease is radiation used in conjunction with triethylene melamine (TEM), a chemical similar to nitrogen mustard which has an affinity for the retinoblastoma cells. It is highly toxic and must be administered with infinite care.

Early detection of the cancer is vital. If treatment is successful, x-ray and TEM stop the multiplication of tumor cells and gradually annihilate them. A five-year period of follow-up examinations is required. However, once the tumors succumb to therapy they rarely recur.

The Action of d-Tubocurarine on the Extraocular Muscles in Strabismus. D. Duncalf and R. S. Jampel. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 366. March 1961.

Since previous studies have shown the extraocular muscles to be more sensitive to *d*-tubocurarine than other somatic muscles, it was thought that this drug might be used to evaluate patients with different types of oculomotor imbalance. It seemed possible that it could produce changes in eye movements which might be characteristic of various types of heterotropia.

The intravenous injection of *d*-tubocurarine in 26 patients with strabismus did not appear to add clinically significant data. In complete *d*-tubocurarine-induced ophthalmoplegia the eyes assumed a position of rest of 15 to 25 degrees of divergence with no upward deviation. The eye muscles appeared to undergo a distinct pattern of progressive paresis following the injection of the drug in divided doses. The sequence of paralysis of the extraocular muscles was: ptosis; paralysis of upward gaze and convergence; paralysis of lateral gaze; paralysis of downward gaze.

In esotropia the larger the original angle of deviation the greater the tendency of the strabismus to improve after injection of *d*-tubocurarine. In exotropia the angle of deviation remained the same or became worse, except in one case where improvement occurred.

The Relationship of Symbol Reversals to Monocular and Binocular Vision. H. S. Beck. *Peabody Journal of Education.* Vol. 38, p. 137. November 1960.

This study investigated the hypotheses that there would be no significant differences in the number of reading reversals made when symbols were presented: binocularly and monocularly; to the dominant eye and the non-dominant eye; and to children with mixed laterality and those with established laterality. The subjects were 44 second grade children selected on the basis of their reversal tendencies. The median intelligence and read-

ing achievement scores for the group were average.

The results indicated that there were no significant differences with respect to any of the three hypotheses.

It was suggested that the areas of visual perception, spatial orientation, and recognition of forms might be fertile areas of investigation with respect to the etiology of reversals in reading. A word of caution was given relative to the danger of generalizing these findings to older children with reversal problems.

School Vision Testing. Experiences and Lessons of a Two-Year Study. G. E. Arrington, Jr. *Virginia Medical Monthly*. Vol. 88, p. 30. January 1961.

In 1958 the Richmond (Va.) Eye, Ear, Nose and Throat Society appointed a committee to study the problem of school vision tests. The purpose was to recommend a satisfactory screening test to the physicians and nurses in public schools and to train personnel in its administration. Methods and results of vision testing in a high school, a junior high and an elementary school were studied. The results were compared to extensive and carefully controlled surveys reported in ophthalmological journals and by similar societies in other states.

Conclusions and recommendations included the following:

The visual screening test is not a diagnostic examination and therefore no reports of passing the test should be issued. The objective is to determine referability and not visual acuity.

The criteria for referral established were 20/20 on the illiterate "E" chart for children over 10 years of age; 20/30 for those under 10.

Children with 20/20 vision should be referred if they show signs or symptoms of ocular disease.

Children who fail the test should be retested; and if they fail again should be referred. Referral should be by form letter to the family physician and from there to an ophthalmologist of his choice.

A restudy in March, 1960 of data in the Richmond public schools has already shown the effectiveness of this program in bringing up their results in line with national averages. A markedly reduced number of false positive cases are being seen among referred children.

What the Well-Dressed Deer Hunter Will Wear. O. W. Richards, Ph.D., R. W. Woolner and J. Panjian, O.D. *National Safety News*. Vol. 82, p. 43. November 1960.

Extensive field tests were conducted to determine the color that would best distinguish hunters from the natural surroundings. The large area of Fort Devens, Massachusetts was chosen since it offered typical deer hunting terrain. Army personnel cooperated in the study.

Fluorescent colors proved to have greater visibility than the red and yellow Massachusetts hunters are required to wear. Partially color blind hunters may confuse reds with greens, and yellow turns gray to white when there is insufficient light. Although no color was superior for all people and all types of terrain, weather and lighting, daylight fluorescent orange was rated the most effective by both normal and color deficient subjects. This color is recommended for consideration by the Massachusetts legislature for inclusion in the hunting law.

BOOKS AND PAMPHLETS

Rehabilitation and World Peace. Proceedings of the Eighth World Congress of the International Society for the Welfare of Cripples. Eugene J. Taylor, Editor. International Society for the Rehabilitation of the Disabled, 701 First Avenue, New York. 1961. 434 p. $2.00.

The Eighth World Congress of the International Society for the Welfare of Cripples, held in New York, August 28–September 2, 1960 was attended by more than 3,000 persons from 75 countries. Its theme was "Rehabilitation and World Peace."

These proceedings include reports on all the general sessions as well as selected papers and lectures submitted to the Congress by eminent specialists in virtually every area of rehabilitation.

Of special interest to those concerned with the education of partially seeing children is a report of a special session, "Preparation of Children and Youth for Work and Living," under the chairmanship of Romaine P. Mackie, Ph.D., chief, exceptional children and youth, U.S. Office of Education; and Elizabeth M. Kelly, Ph.D., assistant superintendent, public schools, Newark, N. J. Progress around the world is reviewed. An hour-long, seven-scene demonstration is described, in which about 40 children currently receiving special education in the New York City and Newark, N. J. public school systems participated.

Among the subjects which received considerable attention during the Congress were progress and needs of rehabilitation in various countries, psychological aspects of disability, role of the voluntary agency and the volunteer, and the contribution of the handicapped to world economy and understanding.

Eugene J. Taylor, editor of the proceedings, is a member of the editorial staff of *The New York Times*.

Transactions of the American Ophthalmological Society—1960. University of Toronto Press, Canada. 1961. 438 p. $10.00.

The 96th Annual Meeting of the American Ophthalmological Society was held in Colorado Springs, Colorado, May 16, 1960. This volume includes the minutes of the proceedings, the papers that were presented, descriptions of new instruments, and three theses submitted by candidates for membership in the Society, and accepted. These are:

"Hypothermia and Aqueous Humor Dynamics of the Rabbit Eye," by Bernard Becker; "The Aqueous Filtration Angle: A Phylogenetic and Ontogenetic Comparative Histo-Anatomic Study of Mammalian Eyes," by Larry L. Calkins; and "Toxoplasmic Retinochoroiditis," by J. Vernal Cassady.

"School Vision Testing" is the subject of an important paper by Albert E. Sloane and Perry Rosenthal.

Transactions of the Ophthalmological Society of the United Kingdom, Vol. 80, Session 1960. J. & A. Churchill, London, 1961. 708 p.

Papers presented at the 80th session of the Society are included in this volume, as well as the transactions of affiliated societies and lists of members. The 80th session was held during

March and April 1960 at the Royal Society of Medicine, London.

Among the many papers of special interest are the discussions of "The Problem of the Visually Defective Infant" by Frank Law; "The Role of Microlenses in Ophthalmic Practice" by H. Treissman; "The Prognosis of 'Acute' Uveitis," by A. Stanworth; and "Alpha-chymotrypsin in Cataract Surgery," by Dermot Pierse. There are many important papers relating to glaucoma, including the Doyne memorial lecture by Norman Ashton on "The Exit Pathway of the Aqueous."

Importance of the Vitreous Body in Retina Surgery With Special Emphasis on Reoperations. Charles L. Schepens, M.D., Editor. C. V. Mosby Company. 1960. 226 p. $15.00.

The objective of the second conference of the Retina Foundation, held in Ipswich, Massachusetts, May 1958, was to arrive at a better understanding of the problems in patients with retinal detachment of poor prognosis. This type of patient frequently has to be reoperated on.

An effort was made to invite investigators and clinicians whose work and interests were likely to shed light on this problem. Leading ophthalmologists of the United States, Canada, Mexico, Germany and Austria attended, ten as principal speakers, seven as discussion leaders, and 23 as participants.

Among the subjects under consideration were anatomic relationships of the retina to the vitreous body and to the pigment epithelium, physiology of the vitreous, pathologic findings after retina surgery, clinical observations of the vitreous changes, vitreous implants, and scleral resection.

Re-educative Treatment of Suppression Amblyopia. T. Keith Lyle, M.D., Cynthia Douthwaite, D.B.O., and Jill Wilkinson, D.B.O. Williams & Wilkins Company, Baltimore. 1960. 136 p. $5.00.

This is an abridged English version of Jean Sédan's *Post Cure de L'Amblyope Rééduqué* prepared by Dr. Lyle and two associates in the Orthoptic Department of Moorfields Eye Hospital, Holborn Branch, London. It contains visual exercises designed to make the patient concentrate on printed matter or arithmetical or pictorial problems presented to him, and to detect certain mistakes in texts or figures. It also includes tracing exercises which help to improve visual orientation by association of hand and eye movements.

Its main use is for home exercises, but detailed instructions should first be given by the ophthalmologist or orthoptist in the office or clinic, where it can also be used under supervision.

Distinguished for its excellent format and typography, the book should be welcomed by those who were unable to use the original text because of inadequate knowledge of the French language.

The Eye 65 and Over. Dan M. Gordon, M.D. New York Hospital; Cornell University Medical College and the L. Margolyes Foundation. 12 p. 1960.

Some of the more important ocular physiologic and pathologic changes found in the population of age 65 and over are discussed. Approximately one out of every six of the author's 5,192 patients under study (15.5 per cent) fell into this group. Surprisingly, 83 per cent had vision of 20/50 or

better. The chief causes of visual incapacity were cataracts, macular disease, glaucoma and vascular changes, and accidents. Many other diseases which are found in younger individuals are also seen in the older group, often in more advanced stages.

A continued marked increase in the number of senior citizens, many of whom are well except for poor sight, has made the preservation and restoration of their vision a major ophthalmological problem.

Teaching About Vision. Eye Health Committee, American School Health Association. 1960. 20 p. Available from the National Society for the Prevention of Blindness, 16 East 40th Street, New York 16, N. Y. 75 cents.

This attractive booklet is designed as a guide for teachers in helping children protect and make the best use of their eyes. At various grade levels the material deals with what the teacher should know about eye anatomy and eye development. A glossary of commonly used eye terms, and an eye diagram are valuable features.

Sources of materials and assistance in teaching about vision are listed.

Diabetics Unknown. Groff Conklin. Public Affairs Pamphlet No. 312. Public Affairs Pamphlets, 22 East 38th Street, New York 16. 32 p. 25 cents.

The U.S. Public Health Service has estimated on the basis of a survey that in 1959 there were 1,500,000 diabetics in the United States, as compared to 660,000 reported in a previous survey made in 1937. This represents a jump in the rate from 3 per thousand people in 1937 to 9 per thousand in 1959.

Most medical authorities believe, however, that even the latter figure is too low, since it includes only persons who said they had diabetes. Three intensive studies of individual communities by public health groups have indicated that there are no less than 2,900,000 diabetics in our population, of whom about 1,500,000 are known, and 1,400,000 undiagnosed.

This booklet gives in simple terms the facts about the disease, the symptoms, types of treatment and control, diet factors, psychological problems, and the major disease complications.

Many persons who have had diabetes for a considerable period of time develop eye trouble. It is generally associated with the retina and can lead to blindness. While most diabetics do not go blind it is very important that they have their eyes checked regularly by an ophthalmologist.

Scientific Directory and Annual Bibliography. National Institutes of Health. U. S. Department of Health, Education, and Welfare, Washington 25, D. C. 1960. 111 p.

This is the second annual directory and bibliography published by the National Institutes of Health for reference use by scientists within and outside the government. It contains information on the organization, professional staff, and scientific and technical publications of the NIH program of direct research and field work.

The directory reflects the organizational structure of NIH as of January 1960 and gives the names of key individuals as well as all staff members with doctorate degrees. Also listed are visiting scientists with tenure of a year or more. The bibliography includes scientific and technical papers published by the NIH staff during 1959.

OPHTHALMOLOGY

SECTION XII

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